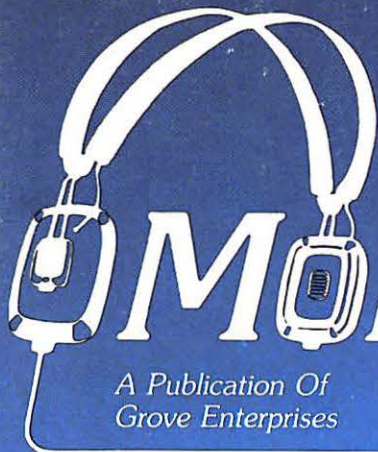


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TIMES

Preparing for the Worst

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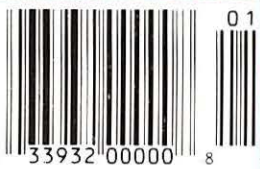
RADIO in the 1990's

March to Freedom: DXing Namibia
Brent Bogdanski's Fiery Chubasco Net

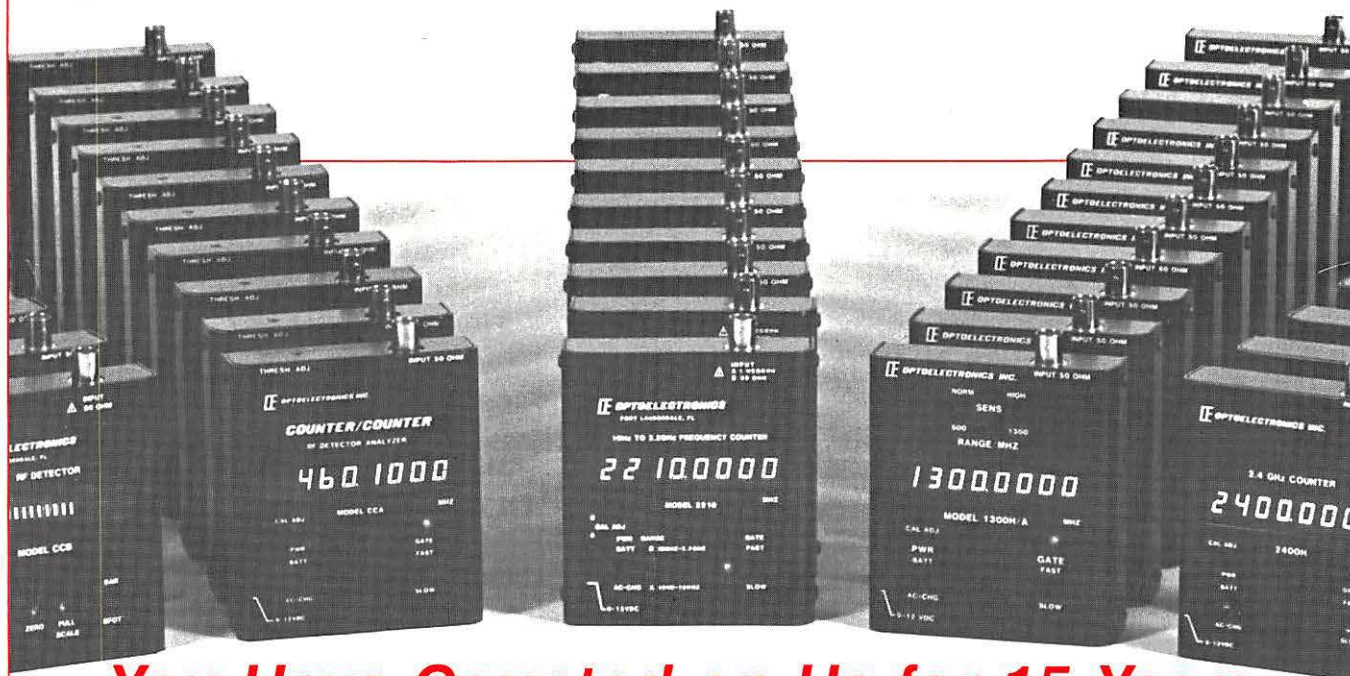
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SENSITIVITY					
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100 MHz	< 3 mv	< 1 mv	< 3 mv	< .5 mv	< 5 mv
450 MHz	< 3 mv	< 5 mv	< 3 mv	< 1 mv	< 5 mv
850 MHz	< 3 mv	< 20 mv	< 5 mv	NA	< 5 mv
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MONITORING TIMES

January 1990

***Radio in the 1990s* by Don Bishop**

6

We stand on the edge of a new decade. In the 120 short months that the 1990s will last, the world of communications is expected to see a number of exciting and often high-tech advances.

According to Don Bishop, communications will be a sci-fi world filled with amazing new methods and modes of communications. From transmissions bounced off the tails of meteors to some of the hottest monitoring since Marconi, the 1990s will clearly be the decade of the radio. Be prepared as *Monitoring Times* starts off with "Radio in the 1990s."

Preparing for the Worst with Radio

12

You don't have to be a paranoic to prepare for the worst with radio. Your radios can be a valuable tool during times of trouble. But like all tools, they need to be kept in a state of constant readiness.

Not all disasters must be cataclysmic, either, to take advantage of your radio. From severe thunderstorm to ground-shaking quake, the payoff of a well-prepared monitor can be big -- your life and the life of your friends and family.



NOAA

***Chubasco Net* by Deborah Howe**

14

A Chubasco is a rapidly moving, violent storm unique to the Sea of Cortez. The Chubasco net got its name from these storms, partly because of the way in which it was born and partly because of the person who runs it. You see, net controller Brent Bogdanski is a character. And after listening to him on the radio, author Deborah Howe had to meet him. You can, too, in this issue of *Monitoring Times*. But beware. XE2VJD is not for the faint of heart.

***Namibian Voices* by Charles Sorrell**

18

"Independence or death!" has been the cry of this long-occupied African country. On its long road to freedom, the same war waged on the ground has been taking place on the airwaves. Take a ring-side seat for history in the making.

ON THE COVER: Radio Station KGO 680's twisted and toppled antennas in the aftermath of the San Francisco quake. (Photo by Doug Chalmers, WA6DMK)



London Calling

by Cathy Turner

22

Never underestimate a nine-year-old, says his mother. An inspired birthday greeting via the BBC leads to a whirlwind visit to England, the BBC, and -- best of all -- grandparents.

Walden Revisited

"I came to the woods because I wished to live deliberately..." The words are from Henry David Thoreau and they have recently been taken as the operating philosophy behind a unique radio station known as Walden Radio 1120. Join American BandScan author Karl Zuk as he meets the people behind this exciting new radio station.

The Yaesu FRG-8800 Revisited is the theme of Larry Magne's column this month, with a look at this popular stand-by. A new scanner, the Realistic PRO-2022, is reviewed by Bob Grove.

Antenna Talk poses the age-old question, "To Vee or Not to Vee?" Read further for the answer to this and many more of your monitoring dilemmas.

Coming soon ...

On the Border Radio stations, you could buy everything from baby chicks to salvation. High powered broadcasters huckstered cures for everything from cancer to sexual weakness. Texan Durell Roth writes about this outrageous and colorful chapter in the history of radio.

From Africa comes a first-hand profile of Zambian radio -- an exotic and often-sought signal. And Bruce Heald takes us on a monitor's journey of American railroads. All this along with the best columnists in the business -- coming up in America's favorite radio magazine, *Monitoring Times*!

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MONITORING TIMES

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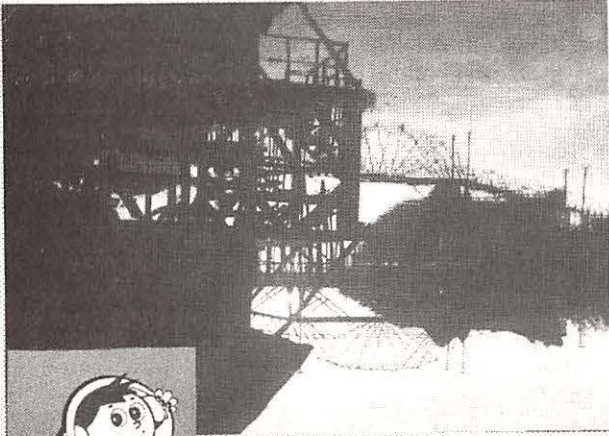
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LETTERS



A QSL from Radio Havana Cuba received by Ray Labrie of Portsmouth, New Hampshire.

Radio Havana Cuba is taking out newspaper ads to let people know about their shortwave station. Billing itself as "Voices of a New World in the Making," the station boasts "a fresh new angle on the news." (You'll certainly find no argument from us there.)

Regrettably, the ad might do little more than preach to the converted. According to reader Steve Forest of Cincinnati, Ohio, the Radio Havana ad runs in the "People's Daily World."

For a while, it looked as though ham radio operators would have to pay a fee -- somewhere between 30 and 35 dollars -- whenever the FCC issued a license. The proceeds of the so-called "cost of regulation" fee would not, however, go to fiscally strapped FCC. Instead, the estimated \$42 million dollars generated by the license fees would go to the general treasury to help reduce the federal deficit.

Fortunately, it appears that the idea is now dead. According to Fred Maia, W5YI, South Carolina Senator Ernest Hollings has told him that he will "work...to strike

these fees from the current legislation."

Had the fee gone through, Maia estimates that the average ham working his way up the ladder of licenses would have to shell out nearly \$200.00 in all.

Keep your hands on your wallet, gentlemen. The Federal Government is here.

"Congratulations,"

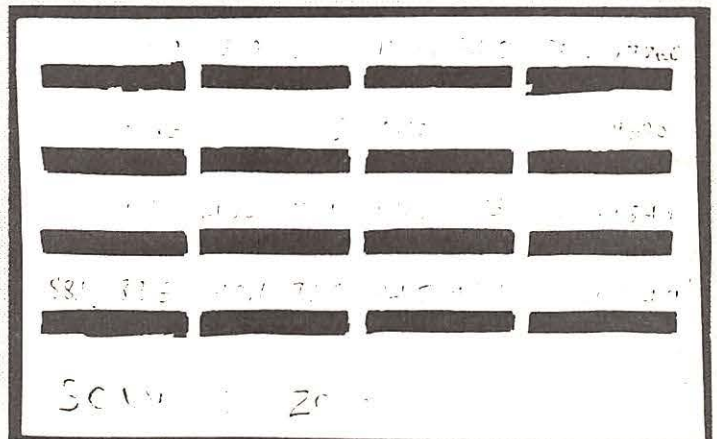
says Ed Coleman of Buffalo, New York, "on your frequency section. I find it to be, without a doubt, the best of all. Of

course, that's to be expected. You've been doing it longer than anyone else."

Thanks, Ed. If imitation is the sincerest form of flattery, then we have been very flattered indeed. Watch for more flattery in the very near future.

We did want to mention that unlike any other publication, we periodically scrap our entire list and start from scratch. It's a tremendous amount of work but well worth it in terms of increased accuracy. This month's list, for example, is completely revised. Be sure to check it out. There's lots of new and exciting DX targets to try for.

A homebrew overlay for the 2010; anyone know of a die-stamped version?



One other thing. We do welcome your participation in the frequency section. You're invited to send in additions, corrections, even station schedules. Send them to Frequency Manager, P.O. Box 98, Brasstown, North Carolina, 28902. Or use the FAX machine, left on for your use from 5:00 PM until 8:00 AM Monday through Friday, and all day Saturday and Sunday. The number is 1-704-837-2216.

Rob Cave of Princeton, Texas, wrote in with a super idea for owners of Sony ICF-2010s. If you own one of these radios, you know that they've got a good deal of memory in which you can "save" your favorite frequencies for later recall. The problem is, of course, that unless you are some sort of a mentalist, you can never remember what frequencies you've saved on what button.

What Rob did was to make a cardboard overlay for the '2010. It fits right over the memory buttons, effectively labeling them. "It takes me about a half hour to make one by hand. A precision die-stamped overlay would be so much nicer."

Here's an admittedly bad xerox of Rob's version. Says he, "If someone could start making and selling these, I would be the first customer."

[Continued on page 100]

Rap: Where It Belongs

Regular readers of *Monitoring Times* have read numerous occurrences whereby people hear local radio stations coming out of their toasters and other unusual electronic appliances. The phenomenon, though often surprising, is not all that uncommon in areas located near transmitting towers. In two Los Angeles neighborhoods, people regularly complain about hearing rap music booming from telephones, televisions, stereos, bedroom walls and even toilets.

The difference between this case and others is that KDAY brags about it, frequently airing promotional announcements saying that KDAY can be heard everywhere, "in cars, at the beach, in living rooms, even in the shower. It reaches more people than you imagine."

"It's awful. It's unbelievable. At night it's unbearable," said one resident. "It's even worse in wet weather. You can walk in my yard when it rains and hear the 'rap, rap, rap' on my chain link fence."

KDAY focuses its 50,000 watt signal in a narrow path toward downtown and South Central Los Angeles.

According to station officials, the station can sometimes be picked up in Hawaii and Japan.

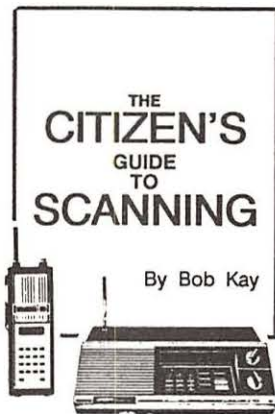
Long Live Nipper

Three stained glass murals of Nipper, the mascot for RCA's Victrola-brand phonograph, have shattered. The windows, which depict the dog patiently listening to his master's voice, were smashed when tornado force winds ripped through Building No. 17 of the Radio Corp. of America plant in Camden, New Jersey. A fourth Nipper portrait, 14-1/2 feet in diameter, was unharmed.

According to an RCA spokesman, the windows that were broken by the wind were actually copies. The first editions, bearing the slogan, "His Master's Voice," were removed in 1965 during a corporate identity change. The copies were hung in 1979 when RCA resurrected the trademark.

Seven years later, GE, which is the parent company of RCA, sold the rights to the alert little dog to Thomson S.A., a state-owned French conglomerate. The original Nipper windows are at the Smithsonian Institution, Penn State University and Widener University in Chester, Pennsylvania.

Everything You Ever Wanted To Know About Scanning...



It's the first complete, comprehensive soup-to-nuts scanner book written for the serious scanner enthusiast. For the person who wants more out of his scanner than police and fire. From a "how to get started" section for newcomers to Bob Kay's "masters" tips on how to get the most out of your radio, **Citizen's Guide to Scanning** has

it. Includes an exhaustive frequency allocation section that tells you who is on the radio and where you can hear them.

Citizen's Guide to Scanning is available from DX Radio Supply for \$12.95 plus 2.00 UPS or .90 book rate, P.O. Box 360, Wagontown, PA 19376.

By *Monitoring Times'* own
Bob Kay

Pitcairn Ham Comes to U.S.

Famed Pitcairn Island ham radio operator Tom Christian, VR6TC, has been selected by the Seventh Day Adventist Church to attend a conference in Indianapolis, Indiana, next July. His expenses will be paid by the church but Christian would like to bring his wife, Betty (VR6YL) and two of his daughters with him.

U.S. hams, anxious to have the opportunity to meet the Mutiny on the Bounty descendant, have started a fund-raising campaign. If you'd like to donate, send your contribution to Howard Phelps, 5580 Lerner Way, Sacramento, California 95823.



Michigan Beginner's Seminar

On January 14, 1989, the Michigan Area Radio Enthusiasts (MARE) are holding a "Beginner's Seminar" at the Dearborn Civic Center. According to club officials, "There will be presentations on mediumwave (AM)/FM/TV DXing, shortwave, utilities scanners and equipment. Write to P.O. Box 311, Wixom, Michigan 48096 for more information.

The seminars run from 2:00 pm until 5 p.m. and all are welcome.

New Light on Alleged Satellite Pirate

About a year ago, we reported on a massive FCC crack-down against satellite signal theft via modified Video-Cipher-II descramblers. Raids were conducted in many cities, including Las Vegas, Nevada.

Now comes word that one of those arrested for allegedly

selling such devices is convicted cop killer Richard Nickl. Nickl, who escaped from a Wisconsin federal prison in 1974, had reportedly been operating United Satellite of America under the name Michael Connors. Fingerprints proved his real identity.

Arizona *Republic* (Doug Chandler, Arizona); Philadelphia *Inquirer* (Richard DeVere, Wagontown, Pennsylvania); San Francisco *Chronicle* (Doug Chalmers, California); *W5YI Report* (Harold Margolis, Seattle, Washington)

CAN RADIO PREDICT EARTHQUAKES?

A disaster like that of October 17, 1989, always carries with it an aftershock of disbelief. Could the devastation and death have been prevented? Are there valid methods of earthquake prediction? Perhaps there are.

Experiments conducted over the last few years suggest that a few days prior to a major seismic event, characteristics of radio signals emitted from the impending earthquake zone change. The larger the quake, the longer the lead time for those indicators.

Joseph Tate of Ambient Research in Sausalito, California, and William Daily of Lawrence Livermore National Laboratory in Livermore, California, have recorded average background signal levels, both natural (atmospheric lightning) and man-made (power grid, ignition noise, etc.) with a network of receivers along the famous San Andreas fault, revealing two kinds of changes in radio wave propagation prior to earthquakes.

The first type of radio wave phenomenon was observed during tests conducted between 1983 and 1986, when a several-hour drop in average signal strength occurred from one to six days prior to a quake. The 6.2 Richter jolt of April, 1984, in Hollister, California, was preceded six days earlier by a 24 hour reduction in radio signal strength on a monitor 30 miles from the epicenter.

In contrast, the second type of phenomenon is a short increase in signal strength before a seismic event. Five days before Palm Springs, California, experienced a 6.5 Richter earthquake in July, 1986, a recording station 15 miles from the epicenter noted a distinct rise in signal levels.

Amateur experimenters have apparently discovered yet another fascinating radio phenomenon prior to a quake: a shifting of radio frequencies in the broadcast band! Ray Cole has been watching this anomaly for the past three years; last October, he recorded an abrupt 8 kilohertz increase in a carrier frequency which lasted for a week, dropping back to normal with the San Francisco earthquake!

Scientists have long known that major seismic events are coupled with crustal electric effects--bright flashes have been seen in the sky and computers have experienced failures. Most likely, this is a piezoelectric effect similar to the spark produced by a pushbutton gas-grill ignitor or spark-ignited cigarette lighter.

Tate and Daily believe that increased ground conductivity of stressed rock strata results in radio waves being absorbed rather than emitted. They also suspect there may be an increase in the leakage of radon gas (another possible indicator of an oncoming earthquake) which might also absorb radio waves.

While Tate says that his team's signal-level observations allowed them to predict every earthquake in 1984 and 1985 without fail, and that accurate earthquake forecasts may be feasible within the next few years, Cole feels that his frequency-shift data are still too sketchy to warrant a full-blown research effort into this phenomenon.

As correlations begin to clarify the picture, *MT* would be eager to host a research program involving experimenters who are technically agile, testing some of these hypotheses. Anyone out there interested?

WHAT TO LISTEN FOR IN THE 1990s

Get set to listen to a fresh set of frequencies for broadcast DXing and two-way radio scanning in the next decade.

by Don Bishop

The decade of the 1990s promises to deliver some surprises for radio listening enthusiasts. New bands, new modes and new communications services offer an explosion of good DXing and monitoring times. Let's start with the AM broadcast band and move up to the gigahertz region:

Broadcast Band DXing

● **New band** -- Expect to hear new stations on the AM expanded band from 1610 kHz to 1700 kHz. Present broadcasters and broadcaster wanna-be's are tussling with the FCC over who will get rights to use the new frequencies.

International agreements under the 1979 World Administrative Radio Conference (WARC) allocated the frequencies for broadcasting, effective July 1. But even with ten years to work on it, the Federal Communications Commission (FCC) has yet to take action, beyond soliciting public comment on how the frequencies should be parceled out.

Some ideas have included allowing present daytime-only broadcasters first crack at full-time licenses on the expanded band. Other ideas have included national assignments, whereby one or more individual channels would be assigned to the same owners. The national assignment could be used to build a single-frequency network to cover the entire country.

Stan Salek, a staff engineer with the National Association of Broadcasters (NAB) in Washington, DC, said the trade association expects the FCC to issue proposed rules within a few months. In Region II, an area defined by the International Telecommunications Union to include North and South America, the power limit for the AM expanded band is 10,000 watts. "That is the maximum," Salek said. "In border areas near Canada and Mexico, stations will have to use less power." To reduce mutual interference, stations in other areas of the country may have to use less power, too.

Because the band is new, DXers of the 1990s have a once-in-a-lifetime opportunity. Stations will come on the air one by one. As they do, you can find them and confirm them before the band becomes too crowded. There will be no other opportunity for broad-

cast DXing like this one, perhaps for the next century.

Although currently silent, KA2XXB, 1660 kHz, will reactivate in the new band starting in February. At that time, it will begin test broadcasts and continue them for eight months to a year. The station is operated by the National Association of Broadcasters (NAB) from Beltsville, Maryland, under an experimental license. Its purpose is to test the effectiveness of an elevated ground plane and an anti-skywave antenna.

Several DXers were able to log KA2XXB during the ground plane tests in 1989. The station is off the air while engineers reconfigure the antenna for anti-skywave tests. NAB staff engineer Kelly Williams said the station will broadcast sporadically at first when anti-skywave tests begin. Initial transmissions will involve impedance measurements and antenna mast tests.

"Once we start into the regular test schedule we will be on for fixed periods," Williams said. "The plan is to hook up a timer to alternate periods in a normal AM mode and then in an anti-skywave mode." For example, KA2XXB may broadcast for five minutes in normal mode, then ten minutes in anti-skywave mode, in a repetitive pattern.

A successful anti-skywave antenna suppresses signal in a certain direction and at a certain elevation above the horizon to protect a distant station from interference. At the

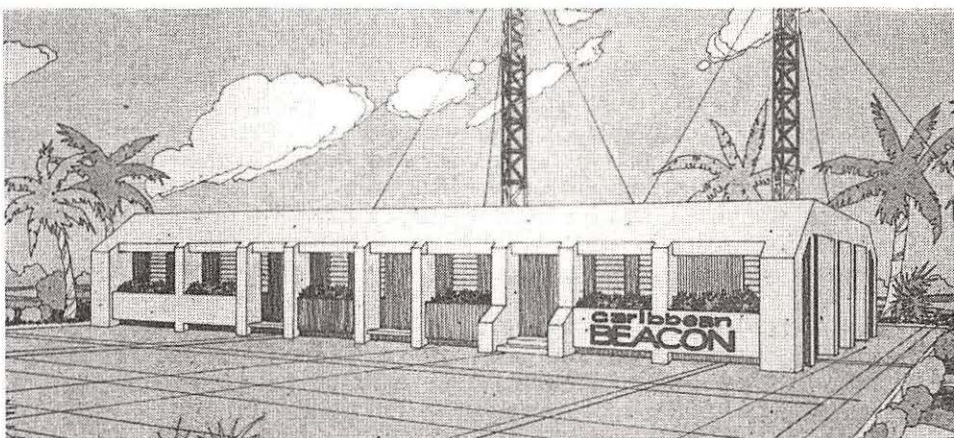
same time, it delivers signal along the ground in that same direction to serve local listeners.

The station will be active mostly during evening hours, Williams said. He estimated the schedule might be 7 p.m. to midnight, with variations due to sunset times and other reasons. DXers can send reports to the attention of Kelly Williams at the NAB, 1771 N St. NW, Washington, DC 20036.

● **New Mode** -- AM DXers will benefit as a new broadcast mode developed by Leonard Kahn proliferates. Kahn, who heads Kahn Communications, makes equipment for AM broadcasters that virtually eliminates distorted reception caused by nighttime fading. Kahn calls the mode "PowerSIDE modulation." It is a form of independent sideband modulation that resembles stereo and compatible single-sideband (CSSB) broadcasting. It raises the power in one sideband by three times and takes off audio pre-emphasis on the strong sideband, placing it instead on the weak sideband.

Listeners with SSB receivers or continuously tunable receivers can listen to the strong sideband without the annoyance of pre-emphasis distortion. On continuously tunable receivers, the audio fidelity is roughly doubled.

On digital radios, the mode reduces selective fading, antenna null distortion and re-radiation problems. One result is better



The Caribbean Beacon is already on the new expanded AM band. It broadcasts on 1610 from the island of Anquilla with 50,000 watts, covering parts of North and South America and West Africa, in addition to the Caribbean islands.

nighttime reception over a wider area -- good news for DXers. A partial list of stations using the new modulation method appears elsewhere in this article.

● **New receivers** -- Denon America, Parsippany, New Jersey, introduces a new line of AM receivers this month that include a wideband filter designed to deliver high-fidelity AM. The receiver is the result of a joint effort by the NAB and the Electronics Industries Association to improve AM reception. This same effort, under the banner of the National Radio Systems Committee (NRSC), resulted in new technical standards for AM transmitters and recommended filter design for AM receivers.

Denon is the first manufacturer to respond to the recommendation. "We played around with AM stereo," said Robert Heiblim, the company's executive vice president. "But to have stereo with a receiver bandwidth of 4 kHz -- what's the point?" Instead, Denon is betting on improved fidelity as a stronger selling point with consumers. "The difference with music is remarkable," Heiblim said. "Even with talk programs, focus groups said the wider band receiver is much better to listen to."

Denon makes home and auto radios with the new wideband, hi-fi AM capability. To find a dealer near you, call Denon at 201-575-7810.

Meteor Burst Communications

Many companies are scrambling for a share of the burgeoning truck tracking and communications market. Regional and national motor carriers can trim costs when they know where their trucks are at all times and they can communicate with the drivers. Qualcomm, Geostar and others use orbiting satellites. Motorola uses its network of 800 MHz repeaters. But two companies use meteor burst communications that can be picked up by VHF receivers.

In Marion, Massachusetts, Transtrack operates a meteor burst control center in what once was the administration building for British Marconi's longwave coastal station. Its network of five remote controlled base stations is partially complete. The 1990s will see a rollout of service on 43.92 MHz, where base stations transmit a continuous, 2,000-watt probe signal.

The base station reaches a mobile unit when the signal bounces from a trail of ionized particles left by dust-particle-sized meteors that vaporize as they enter the upper atmosphere. The meteor signals produce "pings," or strong signals of short duration -- from tenths of a second to several seconds long.

But you don't have to wait for "pings" to hear the station. With this year's exceptional sunspot activity, the base station probe signal

will be heard over wide areas mostly during daylight hours, thanks to refractions from the ionosphere.

The meteor burst stations carry no voice communication, only data. But when you hear the continuous signal or the "pings" on 43.92 MHz, you are hearing one of the most unusual communications stations for the 1990s. Reception reports go to James Feeney, Transtrack, 13 Marconi Lane, Marion, MA 02738.

Pegasus Message, Herndon, Virginia, operates a similar system with a base station probe signal on 49.595 MHz. Reception reports go to Carlos Roberts, Pegasus Message, 13873 Park Center Road, Herndon, VA 22071.

Radio Data System

FM broadcasting in the 1990s will be reshaped by a European development, "radio data system" (RDS). RDS adds inaudible, digitally coded information to FM broadcasts. The codes identify program types, networks and frequencies and can carry traffic information and personal messages.

You'll be able to set your radio to find, automatically, the music or other program you want to hear. For example, the European Broadcasting Union (EBU) has allotted 30 codes to identify news, current affairs, information, sport, education, plays, culture, science, variety, pop music, rock music, light music, light classic music, other music and 15 other types.

The 31st code alerts listeners to distress messages, such as pollution, a chemical leak or other hazards.

The RDS traffic announcement identification feature actually takes control of your car

The 1990s

New DXing and scanning opportunities in the 1990s:

● 1610 kHz to 1700 kHz

The expanded AM broadcast band

Listen now for:

Caribbean Beacon, 1610
KA2XXB, 1660

● 40 MHz to 50 MHz

Meteor burst communications

43.92 MHz, Transtrack
49.595 MHz, Pegasus

● 220 MHz to 222 MHz

Subject to the outcome of a federal appeal, listen in years to come for commercial two-way radio on ACSSB every 5 kHz up from 220.0025 MHz.

● 800 MHz public safety

Tune 866 MHz to 869 MHz for repeater outputs and simplex channels

Tune 821 MHz to 824 MHz for repeater inputs

Frequencies start at 821.0125 MHz and 866.0125 MHz and continue every 12.5 kHz upwards

● 1.7 GHz to 2.3 GHz

Spread spectrum modulation may make it impossible to hear, but this is where a personal communications network may make its home.

radio to interrupt a program, cassette, compact disk and to switch your radio on if it is off, to inform you of a traffic jam, accident, construction zone or other hazards that could endanger or delay you. When the announcement finishes, your programs returns or the radio switches itself off.

In Great Britain, a pilot experiment involves five local BBC networks and links traffic information sources such as police, road and railway authorities, air and sea navigation officers. These sources use computers equipped with BBC software to send information to a newsroom computer at the BBC traffic center at Broadcasting House in London. Processed messages will be made available to local stations via computer screen for announcers to read on the air or will be broadcast by the BBC traffic center over RDS. The experiment will continue until April of this year.

RDS equipped radios can also display identification numbers that tell the listener what program he or she has tuned. With "phone-in" programs, the radio can display a telephone number. Perhaps advertisers will make use of the feature to display addresses and product names, too. Written messages are not intended for car radios, though.

RDS will allow you to select specific programs. For example, you do not want to miss a lunchtime news or feature program. But you fear that, your mind diverted by preparing the meal, you may forget to switch on the radio at the right time. At the appointed time, the program item number feature will switch your radio automatically, as well as a recorder, if you wish.

RDS will automatically adjust your clock, taking into account local time differences, daylight savings time and dates. It adjusts the

PowerSIDE

PowerSIDE AM modulation promises to reduce nighttime fading and interference in the 1990s. Listen for these pioneer PowerSIDE stations:

540	KKGO	Southern California
550	KTSA	San Antonio
570	WMCA	New York
600	WNWS	Miami
630	KTTK	Salt Lake City
800	WONQ	Orlando, FL
960	WELI	New Haven, CT
970	WEBR	Buffalo, NY
1160	KSL	Salt Lake City
1230	KLAV	Las Vegas, NV
1270	KNWZ	Palm Desert, CA
1280	WADO	New York
1300	KMOD	Tulsa, OK
1330	WWRV	New York
1400	WSTC	Stanford, CT
1400	WPCE	Portsmouth, VA
1420	WBSM	New Bedford, MA
1450	KEST	San Francisco
1480	WJIT	New York
1520	WTHE	Long Island, NY
1600	KSSA	Dallas
1600	WWRL	New York
1600	KMNY	Pomona, CA

receivers equipped with special decoders, such as FM broadcast pagers, audio reader services for the blind, stock quotations, physicians information service and others. Under certain conditions, digital data and analog signals can be transmitted simultaneously in as single FM channel without interference.

The motivation for RDS development is clearly European in origin. Many FM stations on the continent have small coverage areas and carry the same program, network-style. When you leave the coverage area of one station, you have to tune the radio to find another carrying the program you just lost. RDS not only finds the station for you, it finds the best frequency for reception.

As you drive a few miles, your RDS radio may change frequencies several times without your noticing. It scans the FM band, recognizes stations on the same network and automatically tunes the frequency with the best reception at any given time. Though valuable in Europe, this feature may offer little to American listeners. Aside from National Public Radio network affiliates, few U.S. stations within a geographical region simulcast network programs.

The European Commission is studying the possibility of equipping car radios with a small computer fitted with a decoder to enable the driver to identify himself and indicate his position on the road. The driver then would receive only relevant traffic information or even personal messages.

Twenty European, Japanese and American manufacturers have developed prototype receivers for the car and home. They cost about \$600. RDS was presented for the first time in the United States in March in

Washington, DC, during the Sixth World Conference of Broadcasting Unions.

Digital Audio Broadcasting

Broadcast sound quality equivalent to that of a compact disk may one day be delivered via digital audio broadcasting (DAB). DAB initially was intended for satellite broadcasting. But terrestrial applications have been found.

A pilot experiment conducted by EBU in Geneva, Switzerland, included a transmitter on Mt. Sleva and two radios in two cars driven about the town. The experiment produced conclusive sound quality improvements.

Digital transmission is insensitive to spurious noise and parasites. The decoder recognizes only the wanted signal. DAB thus could help clean up the FM band by eliminating the effects of unwanted interference.

Unfortunately, DAB is incompatible with present broadcast modulation. All receivers currently in use would have to be replaced. Incompatibility has spelled doom for many other broadcast innovations.

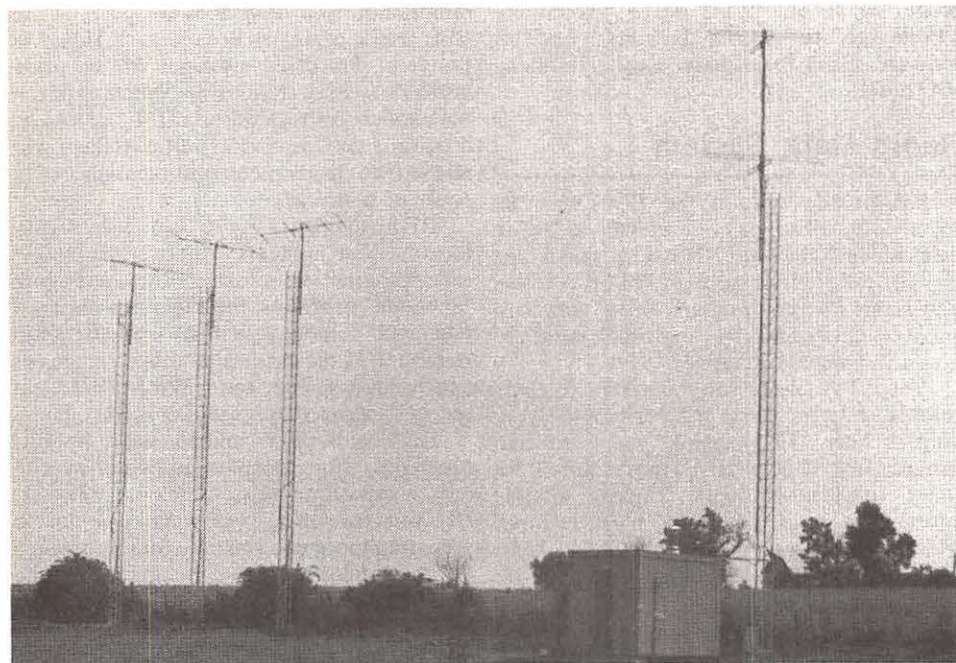
220 MHz Two-Way Radio

An entirely new band for monitoring and scanning enthusiasts to tune in the 1990s may develop if and when a federal court sustains an FCC decision to reallocate it from amateur radio to private land mobile radio. Hams currently use the lower 2 MHz of the 220 MHz to 225 MHz band for control links, packet data communication networks and weak-signal communications. The FCC reallocated that spectrum for the use of private land mobile radio communications, a decision that is being appealed in federal court by the American Radio Relay League and the U.S. Department of Justice.

If commercial interests prevail, a band plan submitted by United Parcel Service (UPS) may form the basis for channel assignments in the new band. Under the UPS plan, the band would be divided into 200 channels consisting of 5 kHz wide frequency pairs.

Channel 1 would be centered at 220.0025 (base)/221.0025 MHz (mobile). Channels would be consecutively numbered so that channel 200 would be centered at 200.9975/221.9975 MHz.

The plan does not spell out a modulation mode, such as AM or FM. But the 5 kHz channel spacing limits the possibilities. For example, voice communication is likely to use amplitude companded single-sideband (ACSSB). ACSSB is a form of single-sideband that uses transmitter audio compressors and receiver audio expanders. The word "companded" is a contraction of "compressed" and "expanded." Companding reduces receiver noise, much the way Dolby stereo reduces tape noise.



A Transtrack meteor burst remote base station in rural Missouri uses Yagi antennas on the three towers at the left to receive and dual turnstile antennas on the tower at the right to transmit a potent 2,000-watt signal on 43.92 MHz.



Affordable 10-Meter DXing

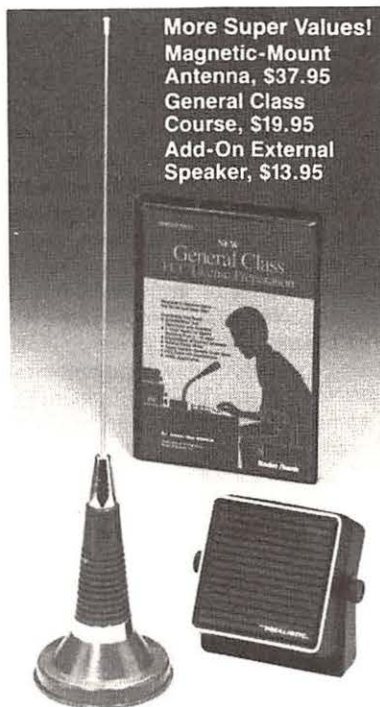
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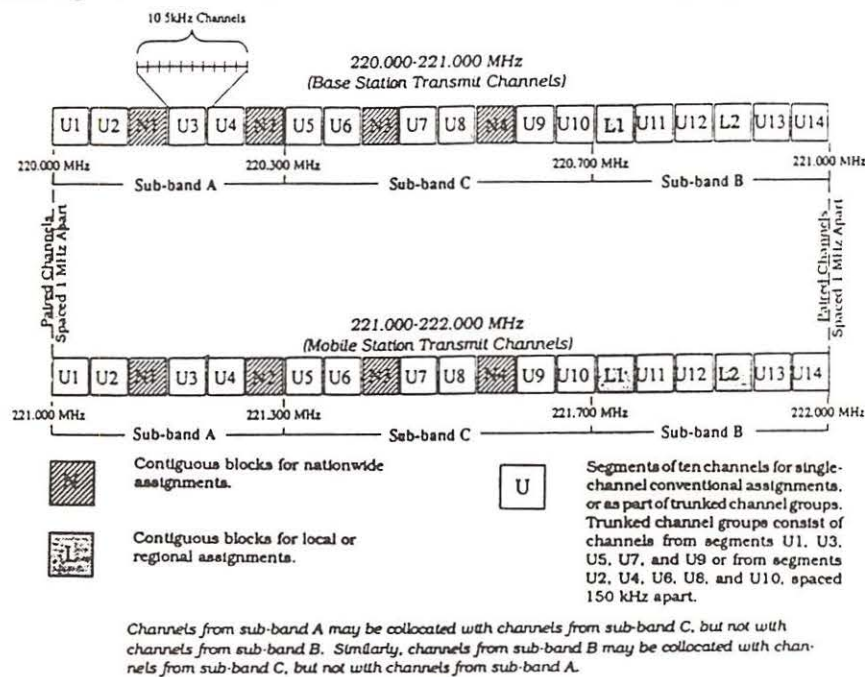
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Suggested Band Plan for 220-222 MHz

The United Parcel Service submitted this plan to the FCC as a proposal for making channel allocations in the 220 MHz to 222 MHz band.



Along with the noise, the transmitter sends a pilot tone that automatically tunes the receiver so the sideband signal always sounds natural, never off-frequency. The signal cannot be monitored effectively with FM or AM scanners, but receivers equipped for single-sideband reception can receive ACSSB. The pilot tone may cause a heterodyne. An ACSSB receiver filters out the pilot tone. The compressing may sound excessive on a receiver not equipped with an expander.

Data communication may use a digital modulation or might ride an ACSSB signal. Either way, an appropriate decoder will be necessary to monitor data communications on the new band.

Some of the channels will be trunked, further complicating monitoring efforts. Trunked two-way radios automatically select open channels from a group of five or ten or more. AS system computer uses a data stream to control mobile unit frequencies, sending them to open channels. Monitors without similar computer capability have to use multiple receivers or scan the channel group to follow a series of communications or conversations.

Monitoring commercial communications on the 220 MHz to 222 MHz band in the 1990s will be much more difficult and challenging than monitoring the hams in that band has been.

800 MHz Public Safety

A frequency band the FCC allocated in July 1986 will see its first occupants in the 1990s. Tune the 866 MHz to 869 MHz band for repeater outputs and simplex channels.

Repeater inputs are from 821 MHz to 824 MHz.

Many of the systems will be trunked, complicating monitoring efforts.

Although the channel centers are spaced every 12.5 kHz, the channels themselves are 25 kHz wide. This means adjacent channels are not used in the same area, because they overlap. The FCC at first wanted to assign channels 12.5 kHz wide. It compromised with public safety users who wanted to ensure the new band's equipment would be compatible with older equipment built for channels 25 kHz wide. Furthermore, they wanted the wider channels to accommodate data transmission and digital encryption, communications that channels 12.5 kHz wide could not support as effectively.

Adjacent channels are used only with proper geographic separation. The national public safety radio frequency coordinator, the Associated Public-Safety Communication Officers, New Smyrna Beach, FL, helps public safety agencies to select frequencies that avoid interference.

These frequencies are governed by national and regional plans developed by the users under FCC direction. No frequencies are assigned in a given area until the FCC passes on the area's regional plan.

Many of these channels will be activated quickly in large urban areas. They may remain vacant for many years to come, and maybe beyond the turn of the century, in less populated areas.

1.7 GHz to 2.3 GHz

Sometime in the 1990s, if Millicom has its

way, you'll hear "personal communications network" (PCN) signals in the 1.7 MHz to 2.3 GHz band — or maybe you won't.

PCN will be the "buzz acronym" of the '90s. Broken down to its most basic level, it means you will have a personal telephone number. No matter where you are, anywhere in the country (and eventually, some say, the world), anyone may telecommunicate with you by calling your personal telephone number.

If you're at work, your office phone will ring. If you're in your car, your mobile telephone will ring. If you're on a hike, your portable telephone will ring. If you're at a friend's house, your friend's phone will ring (the call's for you). If you're in the movies, your pager will beep (or vibrate).

The network will "find" you wherever you are — if you want to be found.

PCN is an extension of the integrated services digital network (ISDN), the latest generation of public telephone services that includes broadband voice, video and computer communications.

New York-based Millicom has asked the FCC to set aside spectrum to develop a PCN. Its backbone will be a cellular telephone network similar to the one in place today. The difference will be smaller cell coverage on the order of 200 feet to 500 feet per cell. Present cells cover a half-mile to several miles or more.

Listening to the PCN may be next to impossible. One form of modulation proposed is code division multiple access, a form of spread spectrum modulation. Spread spectrum modulation is characterized by its high level of security. It cannot be detected, intercepted or jammed. By way of contrast, FM communications that today's receivers and scanners are built to monitor can be detected (you know when a signal is there), intercepted (you can listen to what is being said) and jammed (a transmitter on the same frequency can prevent communication).

Spread spectrum offers the level of security that PCN users will demand. We can tell you when such a network goes into operation, but some advances in monitoring technology will have to be made before we can tell you how to listen in!

From the AM broadcast band up to 2.3 GHz, the 1990s will offer several unique and quite a few unusual opportunities for DXers and monitoring enthusiasts. With new bands at 1600 kHz, 800 MHz and perhaps 1.7 GHz, you'll have the chance to be among the very first to hear new stations as they come on the air. Early years of the new decade will correspond with high sunspot activity to bring you signals at higher frequencies than ever, including the new meteor burst truck tracking and communications stations. The '90s will be a great time for listening.

mt

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Uniden Corporation of America has purchased the consumer products line of Regency Electronics Inc. for \$12,000,000. To celebrate this purchase, we're having our largest scanner sale in history! Use the coupon in this ad for big savings. Hurry...offer ends March 31, 1990.

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PREPARING FOR THE WORST WITH RADIO

Sometimes it takes a hurricane or an earthquake to remind us how much our high-tech world depends on a thin little wire that plugs into the nearest power station. Recently in the Carolinas and again in California, Mother Nature severed our electrical umbilical cord.

Easterners watching ABC network television shortly after the earthquake saw a local San Francisco newscaster explaining how fellow residents should turn the gas off in their homes in order to prevent fire. She even noted the page number in the phone book where quake victims could find additional information.

All this seemed admirable public service until you realized that most of the people who could smell gas weren't watching TV. They didn't have electricity. In the dark, literally, and in need of advice and information, they remembered the value of a long undervalued gadget -- the radio.¹ Fortunately, it still worked.

For most people, market leaders such as KGO-AM (despite losing most of its antenna array) and CBS' KCBS-AM became the main source of information. Many stations went on auxiliary power and reporters called in on regular and cellular phones.²

KABL-FM/AM engineering manager Dennis Gooch and his assistant literally camped at the station's studio/transmitter site to ensure that the beautiful music station stayed on the air. Gooch was riding with General Manager Mike Grinsell about 250 miles from the station when the quake hit. They felt the vibrations and assumed it was a flat tire.

"We pulled over and I thought, 'Oh God, I'm with the GM. That means I'm going to have to change the tire,'" he recalled.³

Still, Gooch considered himself fortunate. His station received minimal damage and he was prepared for disaster. But how about you? Owning a scanner or shortwave receiver is not enough. You've got to be prepared for the worst.

Preparing for the worst does not necessarily mean preparing for Armageddon. It can be any unforeseen event where using your radio might help you to make a better informed judgment. For example, if the lights were to go out in your home right now, would you, could you, use your radio to help you find out what was happening?

The first thing to keep in mind is that your



Suddenly you are without power. Where's the radio? Does it have batteries? Your life could depend on it.

radio requires power. It sounds obvious but you'd be surprised by how many people are caught by surprise when the radio won't turn on. The first thing to go in most disasters -- whether a car knocks down the utility pole at the end of the street or the Bulgarian Army launches a ground assault on the east coast -- is the power. Your radio should have an alternative source of juice.

Owners of battery-powered radios should not be smug. Batteries don't last forever and without the 115 surging through the wall outlets to recharge them, you'll be in as bad a shape as your neighbor in a handful of hours. Making sure your radio can operate off the car battery is one way of extending the useful life of your radio during a disaster.

Some people may wish to go further than this by investing in long-term alternative sources of energy like generators or solar panels. Both can provide other benefits, such as lighting, as well.

A good frequency list is something else to consider. Depending on the radio you are using, all those prime channels you stored in the unit's memory could be lost when the electricity blinks out. Even if your radio has a

battery back-up and a mind like a steel trap, it still makes good sense to have an emergency frequency list handy. "Handy" means stored in the place where you would likely take refuge in time of emergency.

We've started a "disaster" frequency list for you. And we've left room for you to fill in the important local channels. And by the way, don't feel the least bit embarrassed about putting this list together and storing it in a safe place. We know a lot of *Monitoring Times* readers from the Bay Area who say that they would have killed for one on the 17th of October, 1989. They couldn't get to their frequency directories when they most needed them. Their houses had collapsed over them.

There are literally hundreds of ways you could prepare for disaster, many related to radio and many not. Of all the people who wrote to us following the San Francisco earthquake, virtually all wished for a source of reliable light. Many others made suggestions on the physical day-to-day placement of their equipment so that it would be more accessible if and when disaster strikes.

By owning a scanner and/or shortwave radio, you already have the jump on your neighbors. And that very radio -- the same one that can provide you with so many hours of uninterrupted entertainment -- can also give you the ability to make more intelligent, informed judgments in time of trouble.

Let's close with one simple example -- one that's very plausible and hardly sensationalistic. Your local radio station interrupts its programming to say that a freight train carrying some sort of unidentified chemical has derailed just south of town. The town fathers say that there is no need to do anything other than stay calm and remain in your house.

Are these people telling you everything they know? Is what they know enough? Do you trust the lives of your family and friends to their judgment?

You can find out for yourself by simply turning on your radio. If your radio works and if you know where to tune. Making the right decision could be the difference between life and death. Making sure that there are fresh batteries on hand is one step you can take and a small price to pay for that information.

¹Chicago Tribune (Eleanor Randolph);

²Broadcasting; ³Radio World;

Tuning in on Disaster Communications

Disasters — whether manmade or natural — come in many forms. Hurricanes, aircraft accidents, oil spills, ship collisions, tornadoes, floods, earthquakes, explosions, fires, dam breaks, hazardous spills and more threaten our daily lives. Listening in on related communications can provide insight, drama and pathos.

A list of local police, fire, medical, forestry, government, business and industrial assignments should be within reach of every scanner owner. Such lists are often available from local scanner dealers. An up-to-date directory like *Police Call* (available from Radio Shack stores nationwide and Grove Enterprises) will provide not only specific assignments in your area, but general allocations for you to search in case of an incident.

For shortwave monitoring, the new *Shortwave Directory* from Grove Enterprises, from which most of the HF listings below have

been extracted, contains a wealth of valuable frequency information and is highly recommended.

Some channels are used nationwide. It wouldn't be a bad idea to program some of

these ranges into your own scanning and shortwave receivers just to have an edge on disaster information. All frequencies shown below are in megahertz.

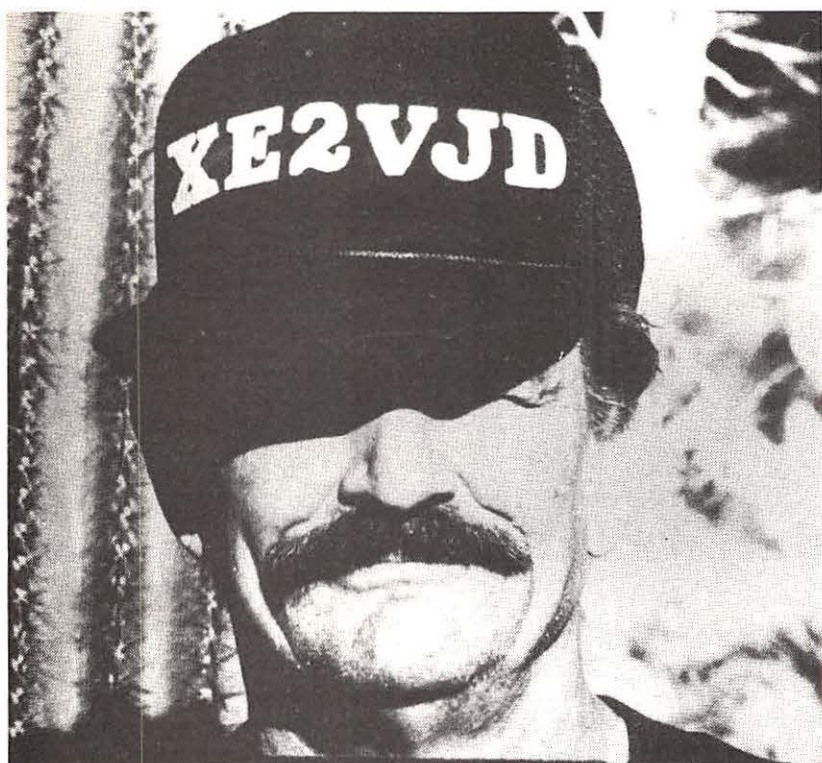


Doug Chalmers, WA6DMK

Where to Listen in an Emergency

Police mutual aid	155.37	_____
Local:	_____	_____
Fire mutual aid	154.37	_____
Local:	_____	_____
Hospitals	155.340, 462.950-463.175	_____
Local:	_____	_____
National Weather Service broadcasts	162.40-162.550	_____
Amateur hurricane networks	14.275, 14.283, 14.290, 14.303, 14.325	_____
NOAA hurricane hunters	6.673, 8.962, 9.011, 11.396, 13.354, 122.925, 123.050, 304.8	_____
Aircraft emergency and rescue	121.5, 123.1, 243.0	_____
Airline flight weather	6.604, 13.270, 13.282	_____
Civil Air Patrol	4.4675, 148.15	_____
Federal Aviation Administration	6.870, 8.125, 13.630, 16.348, 20.852	_____
Federal Emergency Management Agency	5.211, 10.493	_____
American Red Cross	47.42, 47.46	_____
Amateur two-meter repeaters	145.11-147.39	_____
U.S. Army Central American/U.S.A. network	13.950, 20.885	_____
Federal Protection Service	415.200, 417.200	_____
U.S. Coast Guard	2.182, 2.670, 3.203, 5.680, 5.692, 5.696, 8.984, 156.8, 157.05, 157.10, 157.15, 381.8	_____
Offshore petroleum drilling platforms	4.6375	_____
NASA space launch support	5.190, 5.810, 10.780, 20.198	_____
Space Shuttle	259.7, 296.8	_____

mt



Deborah Howe

CHUBASCO NET

by Deborah Howe



Have you ever listened to a ham radio operator and wondered what he looks like?

I'm sure you must. I do. It was this curiosity that led me to the doorstep of Brent Bogdanski, XE2VJD.

Those who have sailed the Sea of Cortez in the last few years will undoubtedly know of whom I'm speaking. But if you don't, let me introduce you.

Brent runs the Chubasco Net, a net designed to pass traffic to and from sailors cruising in Mexican waters. From his hillside home in Guaymas, Sonora, Mexico, he broadcasts daily on 7.294 (40 meters) at 1530 GMT.

XE2VJD is not the slight, dark-haired person with pencil moustache that I had pictured. Instead, I found him to be over six feet, weighing in at approximately 165 pounds. His light brown hair lies in curls atop his head, lending a beige hue to his gray-green eyes. His moustache is far from thin. His upper lip bears the weight of a bushy protrudance of hair befitting the grandest of walruses.

Attired in coordinated sweats, he casually greeted me, led the way to the breakfast bar that divides the kitchen from the dining room, and for the next few hours we talked about the net and his participation in it.

Brent first became interested in ham radio in 1981 after he moved from Southern California to Mexico. In 1978, after 18 years in the Los Angeles County Fire Department, he was forced to retire on a job related disability. It wasn't long before he became involved in the cruising community and was introduced to ham radio. He got his novice license, bought a ham radio and began to spend a good deal of time listening to the various nets -- but was unable to transmit.

"I listened to the Baja Net every day and I'd sit there frustrated that I couldn't grab the mike and talk because I couldn't, legally, only having a U.S. Novice." However, in 1984, the Mexican government began issuing provisional permits to U.S. licensed operators. Brent was one of the first to apply.

"I introduced myself to the Baja Net and volunteered my services of being a relay. I was up just about every day. After a while the manager of the net, W6IM, began calling me the Southern Net Control for the Baja Net."

Brent started coming up twenty minutes early to gather on-site weather in cooperation with Pat, N6DJI, relaying the reports that Pat was unable to hear. This developed into an early bird session for which he set up his own format.

Quarterly meetings for the Baja Net were held in Southern California. Unable to attend the meetings held 800 miles away, Brent made his contribution by mail.

"I wrote letters about how I thought the net could be improved. Primarily, suggestions came from the cruising community using the net . . . how certain net controllers seemed to show favoritism to certain people. The people had a feeling that the Baja Net was a good ole boys' net. And, if you weren't a good ole boy, you just sat and waited 'til the good ole boys got done talking and then you got picked up."

Over the air Brent encouraged those cruising in Mexico to apply for the newly-established Mexican provisional license, informing them that by continuing to use their American call signs they were operating illegally in Mexico.

Dissension developed among the troops.

The long-established net control operators of the Baja Net asked Brent not to call himself the Southern Net Control Operator... he was merely to say the Southern Relay. They asked him not to slop his early bird session over into net time, which he sometimes did; and they disagreed with Brent on the necessity for cruisers to obtain a Mexican call sign.

"At that time they were still handling U.S. calls that were in Mexican territorial waters but had not obtained their Mexican calls. So they were actually handling pirates. It had been two years that the Mexicans had had their program in operation."

In June of 1986 the controllers of the Baja Net put the Mexican Provisional License under the microscope. For starters, they had it interpreted from Spanish to English. After studying it, they concluded that voice privileges were not permitted in Mexico to those holding less than a general class ticket.

Wrong, said Brent. "The license clearly states that all licensed amateurs will receive Class 2 privileges, which includes voice privileges, anywhere on the prescribed band."

The disagreement continued. Brent wanted U.S. licensed hams traveling in Mexico to get their XE2s and the people on the Baja Net wanted Brent and all the XE2s holding only a novice or technician license to upgrade to general. An ultimatum was finally given . . . upgrade or get off the air!

"They wrote and told me that beginning October 1 they were only going to handle XE calls that had general U.S. class licenses or above and they knew that I could upgrade as they all had."

One thing that becomes evident after talking to Brent is that he does things because he wants to, not because he's told to, especially when he knows he's right. "I just said to myself, 'the hell with it'. Nobody is going to tell me that I have to upgrade to general when I live in Mexico and I'm operating legally."

Brent wasn't the only person who disagreed with the new ruling. "A number of people said, 'To hell with them. Let's form a new net that will go by the rules.'" In August of 1986, Brent checked into the Baja Net to say goodbye.

"I came onto the Baja Net and did my farewell. I put out a QST and told them that due to irreconcilable differences I would no longer participate in the Baja Net and that anybody who wanted to talk to me, I would be on a new net called the Chubasco Net."

The next day the Chubasco Net began.

The net derives its name from a rapidly moving, violent storm that is unique to the Sea of Cortez and it was in that manner that the Chubasco Net was born -- out of a tornado of controversy.

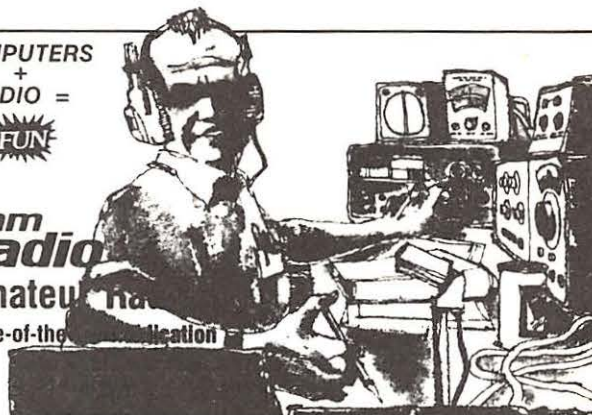
Today almost all cruisers in Mexico hold XE2s, but there are still a handful of holdouts operating with their American call signs. But you won't find one on Brent's net.

Presiding over the net on a daily basis has allowed Brent the privilege of running it his way and Brent operates a controlled net. He holds the reins.

The morning preamble opens the net each morning.

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Brent charges out of the starting gate with the rules of order and that's exactly what they are for -- to maintain order.

The rules are simple, though on hearing them for the first time they may seem overwhelming. And every morning within the first 15 minutes someone goofs up. It never fails that sometime during the net some lackadaisical operator will reenter the net incorrectly. Those of us listening can see the hairs raise on the back of Brent's neck. We wait for the inevitable reproach.

In a normal conversation Brent has a strong voice. When you push his button, it develops an edge. Now comes the true test of man or womanhood. After a public scolding, will the offender of the airwaves come back or will they merely melt into the woodwork to wait for another time or maybe even another day?

I asked Brent why he thought people find it so hard to follow the protocol.

"A lot of people don't listen. They've probably heard the preamble a number of times, but they're sitting in the cabin having coffee, talking to their wives, and not listening to what the net controller is saying. They're not listening to what the protocol of the net is."

For those new to the net and for some old-timers his words seem harsh. They sound especially strong if they are directed toward you. And, believe me, there isn't a Chubasco Net entree alive and breathing who has escaped the wrath of Brent. Checking into the net for the first time is an intimidating experience.

But from his side of the mike Brent sees it differently. He doesn't feel he's being harsh. "To me it's an education. I don't try to berate anybody."

There are those that are told time after time but continue to enter the net with a laissez faire attitude. And Brent admits that these people push his button.

Brent has a wide listening audience. His fury and strict adherence to the rules is a favorite topic among cruisers. If the happy hour conversation begins to lag, the subject of Brent is sure to liven things up. Staunch supporters of equal rights for women are offended by Brent's use of the terms "dear" and "got you going, girls."

The troubles people get into are viewed by some as a comic soap opera, "As the Dial Spins." The element of suspense -- who will be next? -- keeps people coming back for more.

People also listen and participate because Brent runs a good net. Accompanied by an impressive list of two-ways and relays from the western United States, approximately 350 pieces of traffic are passed each week. He follows up on inquiries, gets people connected, and is proud of the high percentage of traffic he completes. The net is operated in a business-like manner with chit chat taking place only before or after the net.

"I hate like hell when somebody comes back, says 'recheck'. I acknowledge and they come back with 'well, we

went up to 20 meters and we were up at 290 and there was a QSO going on and....' That irritates me no end. You see, I don't give a damn what you found where you went when you went. All I want is to get you with your station and back again. I don't need to know what happened up there."

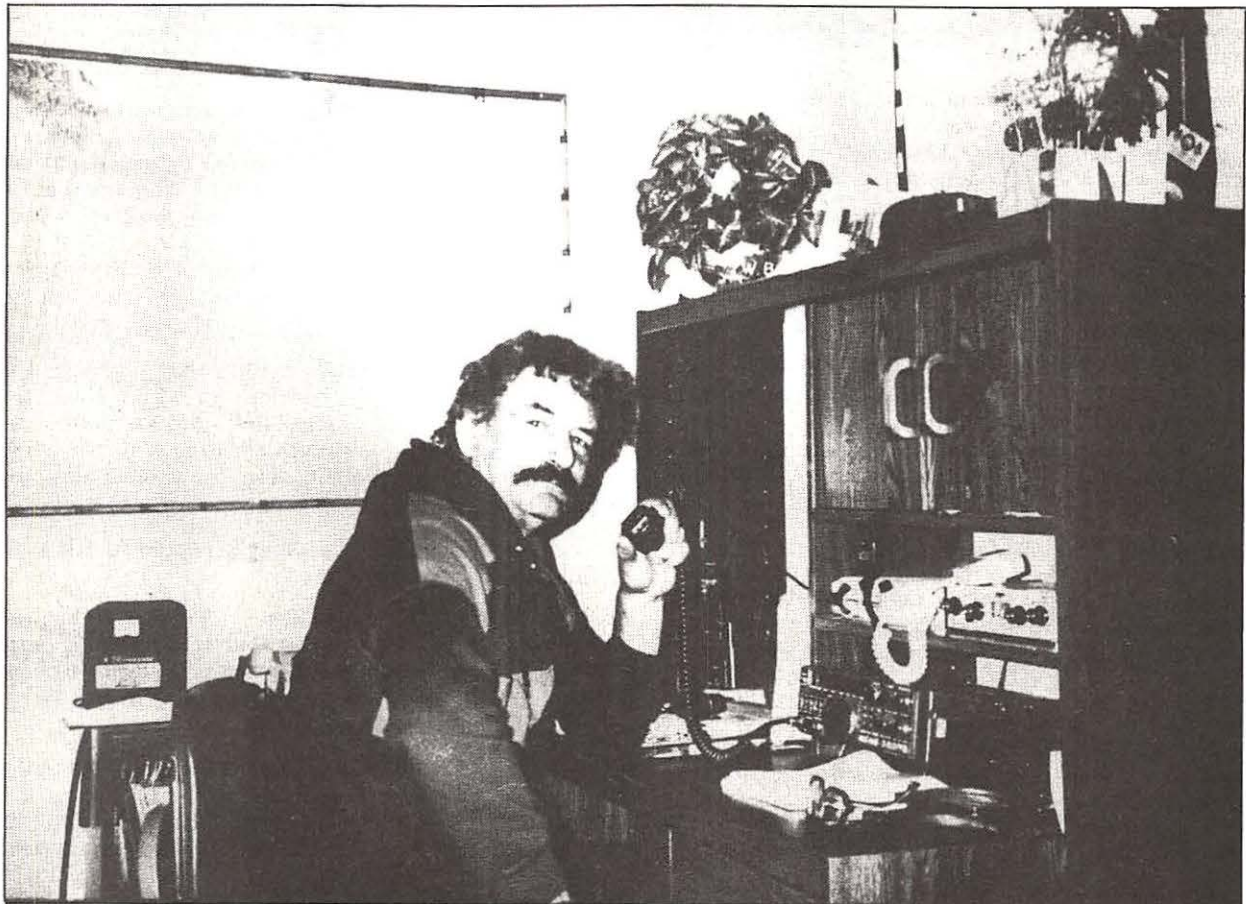
Running the Chubasco Net seven days a week is as rewarding as it is frustrating. Brent can take a lot of credit for keeping people in touch with friends and family. He has handled numerous emergencies at sea to the point of saving lives and, as a veteran firefighter and ex-captain of the paramedics, he is qualified to do the job.

Also, in cooperation with the Chubasco, Sonrisa, and Shriner's Nets, he has set up a fund for sending crippled children in Mexico to the Shriner's Hospital in Los Angeles for corrective surgery. Donations come in mostly from the yachting community.

Running the Chubasco Net has been a gratifying experience for Brent and, as long as it remains fun, he will continue to rise with the sun in order to direct traffic from the busy intersection he has created in the Sonora Desert of Mexico. And, as long as he tunes up on 7.294, the controversy will continue.



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Deborah Howe

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"Sorpresas y Regalos en el Kiosko de Radioscan"

Namibian Voices

by Charles Sorrell

"Independence or death!

SWAPO will win and Namibia will be free!"

The rallying cry of the Southwest Africa People's Organization appears to be coming true at long last.

The struggle for Namibian independence can, in some ways, be traced back to 1908 when 84,000 blacks were killed in a revolt against the Germans. Germany had proclaimed a protectorate over the southern coastal town of Luderitz in 1884 and soon extended the protectorate over the entire territory.

South Africa occupied Namibia during World War I. Like some distant aunt of which one is barely aware, it dropped in for dinner one day and never left. Southwest Africa was placed under South Africa's administration by the League of Nations following the First World War and Pretoria governed the area through World War II.

Then the United Nations called for the area to be placed under UN trusteeship, but South Africa refused to surrender its old League of Nations mandate and has continued to run things ever since.

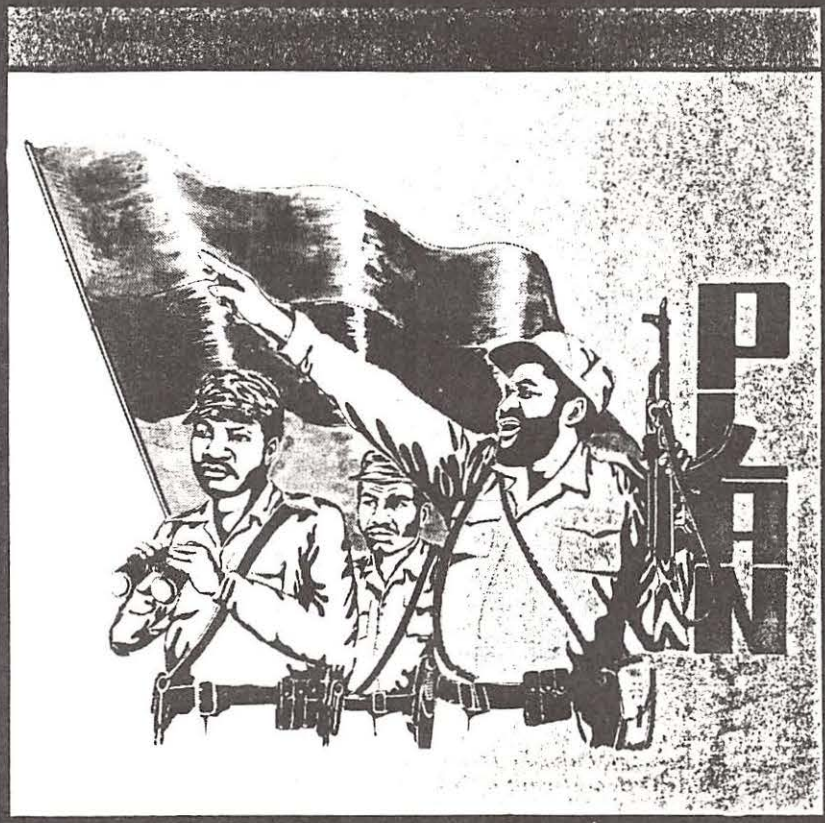
The UN adopted the Namibia name in the 1970s and recognizes SWAPO as the "sole and authentic representative of the Namibian people."

When independence came to Angola in 1975, factors came into play which had a direct bearing on the desire of South Africa to maintain its hold on Namibia and which helped delay the process of independence even longer. Angola's Marxist government allowed the SWAPO guerrillas to operate

The Southwest Africa People's Organization produces the Voice of Namibia which several African stations broadcast daily.



***information
bulletin***



from its territory, thus giving them a safe haven from which to launch raids against South African forces in Namibia.

Eventually South Africa retaliated, launching raids against SWAPO within Angola. And eventually there came South African support for the UNITA guerrillas fighting against the Luanda government and the Cuban military force serving to help keep that government in business.

South Africa has never been anxious to relinquish its control over Southwest Africa. Pretoria doesn't want an independent Namibia hosting the guerrilla forces of the African National Congress and allowing that group to operate against South Africa from Namibian territory. SWAPO leader Sam Nujoma (who returned to Namibia last fall after a near 30 year exile) says such activities won't be permitted in an independent Namibia.

South Africa also wants Cuban troops out of Angola and refused to take any steps towards an agreement on Namibian independence until at least a time table for the withdrawal of Cuban troops had been agreed to.

Many of these elements came together over the spring, summer, and fall, helped to some degree by the fact that South Africa did see some advantage to getting its troops out of the territory. International pressure for Namibian independence was increasing and maintaining troops there was an increasing drain on a slowly weakening economy.

Negotiations have led to a cease fire in the guerrilla war (though it has sputtered once or twice), the arrival of a United

Nations Transitional Team to oversee elections (which occurred in November), and subsequent steps on the road to independence.

All along -- and even more so now that matters are reaching a head -- broadcasting has played a considerable role in the Namibian affair. The South Africans, the Namibians, other sympathetic African governments, the United Nations and one or two others are all using shortwave broadcasting, and North American listeners have a fair to good chance of tuning in on a lot of it. Here's a look-see on radio's role in and around Namibia:

The government broadcaster in Namibia is the Southwest Africa Broadcasting Corporation's Radio Southwest Africa. On shortwave it uses two 100 kW transmitters and perhaps a third transmitter of undetermined power as well. Radio Southwest Africa airs two program services on shortwave:

Program One is listed for 3270 and 4930 from 1600 to 0630. This service consists of relays of two local language networks broadcast on mediumwave and FM.

Radio Herero is carried Monday through Friday at 0400-0440, 0610-0900, and 1300-1630; on Saturdays and Sundays at 0400-0505, 0830-1000, and 1300-1930.

Radio Damara-Nama is carried at 1000-1300 and 1630-1900 Monday to Friday and 0505-0830 and 1000-1300 Saturdays and Sundays.

Table 1
SWAPO "Voice of Namibia" Broadcasts

Radio Nacional Angola:	Monday-Saturday 1630, Sunday 1600, on 7245, 11955
Radio Tanzania:	Monday-Friday 1630, Saturday 1815, Sunday 0415, on 9750
Voice of Ethiopia:	Daily 2100, on 9595
RDF TV Congolaise:	Monday, Tuesday, Friday 1745; Wednesday-Thursday 1800, on 15190 (Note: this station is usually inactive.)
Radio Zambia:	Monday, Tuesday, Thursday 1830; Wednesday 1810; Saturday 1845; Sunday 1130 and 1830; on 9505
ZBC Radio One, Zimbabwe:	Monday, Wednesday, Friday 2100, on 5025 (very likely inaccurate frequency)

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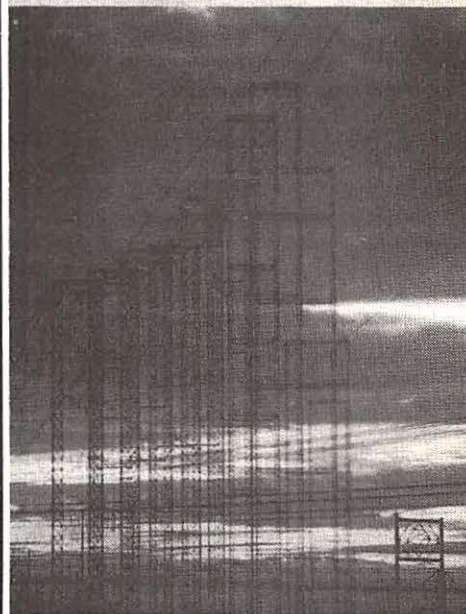
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National Union for the Total Independence of Angola

UNITA

South African support for UNITA forces seeking the downfall of Angola's Marxist government was partly in retaliation for Angola's harboring SWAPO guerillas.

Program Two is the national network in Afrikaans and German from 1600-0630 on 3290 and 4965. Afrikaans airs at 0400-0440, 0610-0900, 1100-1600, and 1700-1930 Monday through Friday and straight through from 0400-1930 on Saturday and Sunday. German language programming airs Monday through Friday only, at 0900-1100 and 1600-1700. Reception in North America will be limited to the 0400 period.

This fall a new Radio Southwest Africa channel appeared -- 7190 (7189.5 in practice) signing on in Afrikaans at 0530. The full length and content of this service hasn't yet been determined; it may be a new third short-wave transmitter or a move from one of the Program Two frequencies.

Reception reports can be sent to the Technical Services Department, Southwest African Broadcasting Corporation, P.O. Box 321, Windhoek 9000, Namibia.

The SWAPO opposition has had its "Voice of Namibia" going for some years now. Actually this has been a series of regular programs aired on several different government-owned African stations. From the evidence available, it appears that each program is produced by the local SWAPO office in each of the countries from which these programs are aired. Table I shows the most recently available schedule of SWAPO broadcasts.

None of these are easily received by North American listeners. The best shots -- and poor ones at that -- are via the Voice of Ethiopia or via Angola on 11955. The SWAPO program has been heard in North America, and QSLed. Reception reports go to the Voice of Namibia, P.O. Box 953, Luanda, People's Republic of Angola.

There is reported to be another "Voice of Namibia" -- apparently an actual station operating from Lubango, Angola, on 6050 at 0430-0800 daily and between 1300-2200 on

weekends. While not certain, it figures that this, too, is a SWAPO broadcaster.

It shouldn't be a bit surprising that South Africa pays a lot of radio attention to Namibia. Present politics aside, the Namibian economy is closely tied to that of South Africa and most of the Namibian civil service is comprised of conservative Afrikaaners from South Africa.

Radio RSA beams several hours of programming to Namibia daily, in all of the appropriate languages. The current schedule for these is:

0300-0400 on 4965 and 6130 in Afrikaans
0500-0900 on 11805 in Afrikaans
0500-0700 on 7270 in Ovambo
0900-1000 on 11805 in German
1000-1100 on 11805 in Afrikaans
1100-1300 on 11805 in English
1400-1555 on 11805 in Kavango
1500-1800 on 11900 in Lozi
(to the Caprivi strip)
1550-1755 on 4880 in Kavango
1600-2200 on 4945 and 6130 in Ovambo
1600-2200 on 4810 in Afrikaans

QSLs on any of these are easily obtainable from Radio RSA, P.O. Box 4559, Johannesburg 2000, Republic of South Africa.

The United Nations is also on the air from Namibia, though on the most minimal level. According to Radio Netherlands' Media Network, the United Nations Transi-

tion Assistance Group (UNTAG) now airs a five minute program on Radio Southwest Africa weekdays on 3270 and 3290 just after 0500.

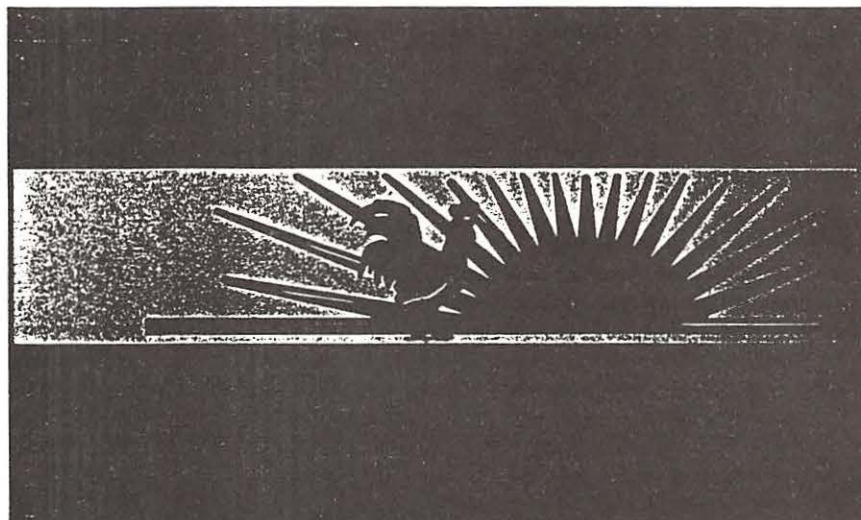
No reports of hearing this in North America have yet been noted. Reception reports could probably be sent in care of United Nations Radio, United Nations Plaza, New York, NY 10017.

Finally, Swiss Radio International is reported to have a transmission intended for Swiss medical teams serving in Namibia. According to the Radio Australia "Communicator" program, this broadcast is in upper sideband over a 15 kW transmitter using 21705 from 2100-2200 with the first half hour in English, the second in Spanish.

This broadcast certainly does exist but one must question why, if it is indeed intended for Swiss personnel, it is aired in English and Spanish.

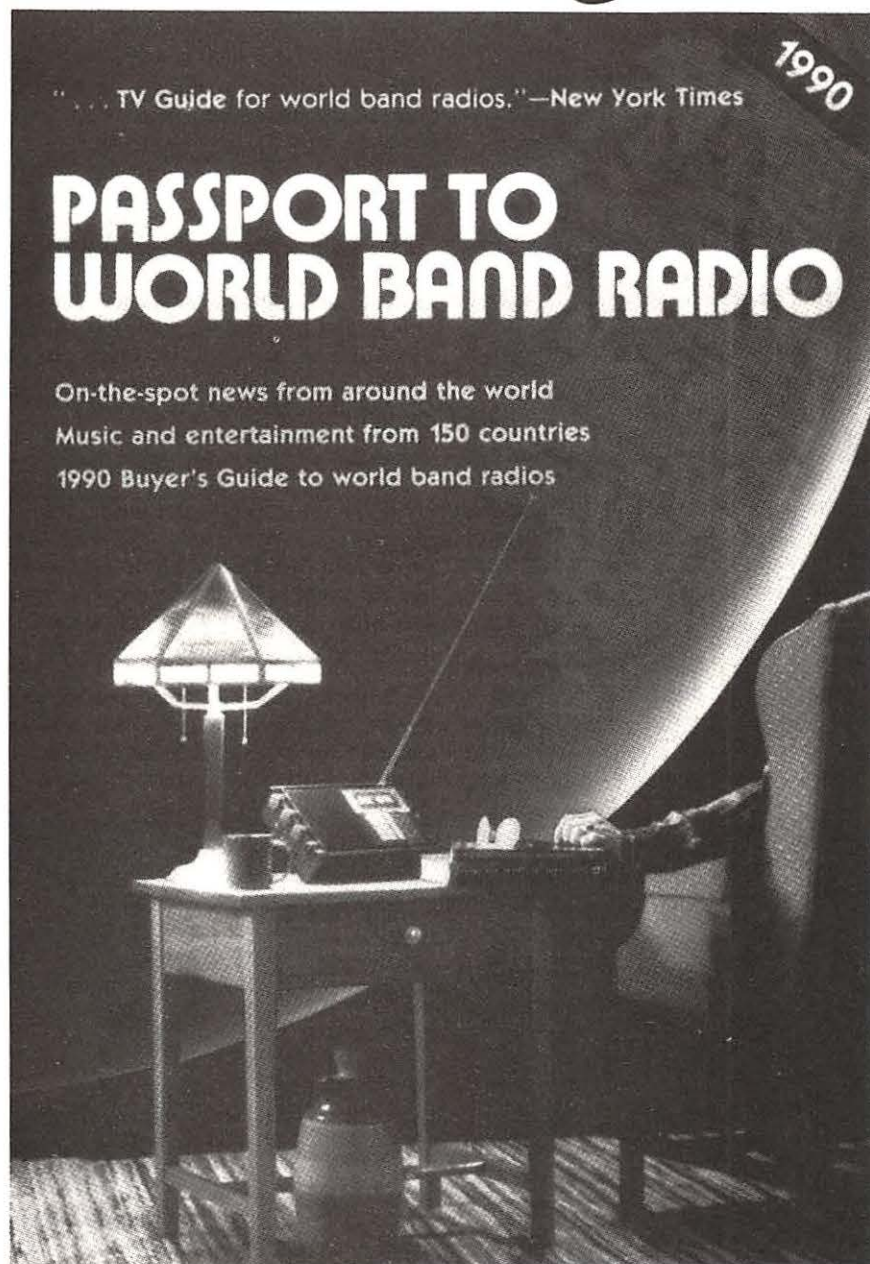
There may well be one or two other Namibian-related shortwave broadcasts on the air, and readers who may be aware of such are invited to pass word to the editor via *Monitoring Times*.

Meantime, there's quite a bit here to chew on and we can surely expect additions or other changes as Namibia moves toward full independence.



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London Calling: "You're coming to Britain!"

by Cathy Turner

I couldn't wait to tell Chris. "Guess what, Kiddo, we're going to England tomorrow!"

Chris sat up. "Do I have to go to school today?"

Mr. Lee met us at Heathrow. With him was a chauffeur and a Mercedes limousine for our trip to Colchester (where Chris' grandparents, Mr. and Mrs. Lay-Flurrie, live). This was class -- this is the first time I've been in a limo that wasn't following a hearse.

At The Rose and Crown Hotel, everyone is excitedly waiting for the great moment. Chris runs up to Grandma. "Hello Grandma, hello Granddad. I'm your grandson!" Hugs all around. The photographer is ready. Snap! Snap! Everyone outside for more pictures.

Can we go to Grandma's house for more photos? Off we go again. Pose here, pose there, pose by the pond. Chris thinks it would be fun to drop a newt down the photographer's pants. The guy takes the hint. One last photo, and back to the hotel for lunch.

At lunch, Mr. Lee invites us on a sightseeing trip around London on Sunday. He'll take us out to dinner, too. What's Chris' favorite food? Dim Sum and steamed dumplings.

After lunch, it's time to crash. Chris and Daddy are roommates. Mom has a room to herself. Instead of giving in to jet lag, I unpack my shortwave radio, *Monitoring Times*, and *WRTH*. I scan the shortwave bands for a while, then longwave. Yes, there's BBC on 198 and Luxembourg on 234. On AM, there's Radio Caroline on 558, not to mention BBC's own domestic stations. I guess we're really in England.

After breakfast the next day, the receptionist brings Chris his mail. It's a parcel from the BBC. Inside are tee-shirts, bumper stickers, pens, balloons, a coffee mug, and other goodies. Chris is amazed and immediately pens a thank you note.

Grandma and Granddad are waiting to show Chris the town. Here's the Norman castle and the Roman wall, but Chris wants to read the "Dr. Who" book Grandma gave him. Fish and chips for lunch? Chris sees

Never underestimate a nine year old. No one will ever know exactly what was going on in his head when he first began plotting Grandmom's birthday present. But even Chris could not have imagined that his letter would lead to an all-expenses-paid trip to England.

Chris began his work early. First, he conned his grandmother into sending him a copy of *The Radio Times*, BBC's domestic TV and radio guide. Upon receiving the guide, he picked out a radio program that Grandma would listen to. Then he wrote to the host -- "I am nine and a half years old. I have never been to England, nor met my grandparents, but I love them very much and have their photo by my bed."

Chris got the address for "Radio 2" from my *World Radio TV Handbook*, and mailed his letter to Grandma and told her to listen to Adrien Love on "Radio 2" on her birthday. Chris was pleased.

The Wednesday following that event we got a phone call at 7:00 a.m.. It was Katy Elay of the BBC, and she wanted permission to release our name and address to a newspaper. It seems that a reporter had heard the birthday greeting, and was so touched by what he heard that he wrote an item in *The Sunday Express*. The next thing we knew, reporter Alfred Lee was on the phone with us, inviting us to England so Chris could meet his grandparents! Could we leave the next evening?



A birthday greeting via radio led to this momentous first-time meeting between Chris Turner and his grandparents.

McDonalds. We end up at Grandma's house for tea.

While we are there the phone starts to ring. Anglia TV wants to send a mini-cam and reporter tomorrow morning for ITN News. Next, Radio Essex calls and tapes an interview with me. Another newspaper begs an interview for Monday morning. This is becoming a media event. Chris thinks it's hilarious.

Sunday morning. Here's Chris and Grandma on page three of *The Sunday Express*. I tell the news agent, "That's my son and my former Mum-in-law." I buy six copies!

Mr. Lee gives us the best tour of London. In Regent's Park, people recognize Chris; he autographs their newspaper. On the train back to Colchester more people are pointing him out, but Chris doesn't care. A long day of sightseeing and a tummy full of Chinese food have almost knocked him out.

Our last day in England is spent with the grandparents. A day to sit in the garden with a cup of tea. We've one last interview. Chris is an old hand at this by now. He tells this reporter he "thinks England is nice because there is very little pollution, and everybody is friendly." He's been a real little gentleman, and Grandma and Granddad are very proud. We invite them to visit us next year.

The Sunday Express even provided us with a limousine back to Heathrow. Chris enjoys talking with the chauffeur. This one is a big fan of "Dr. Who."

Chris is invited to the flight deck on our trip home. When an officer tells him they are in contact with Gander, Chris says he's heard Gander and Shannon on Mom's radio, and that he likes the term "Speedbird."

After the local paper did a feature on Chris' adventure, things settled back to normal. The entire experience didn't phase Chris at all. He still does all the usual kid things: plays "Nintendo" with his friends, complains about homework. I'm still amazed that the whole thing happened, but I must admit, I smile when the phone rings early in the morning.



Cathy Turner is a mother, a regular contributor to *Monitoring Times*, and now, world traveler. All photos are by Bob Turner.

If you have a story of how radio has played a part in your life or the life of your community, send it to Monitoring Times. If accepted for publication, we'll send you \$50.00. All stories should be true, real life events. Manuscripts should be approximately 1,000 words and must include at least one clear photograph.

The Turners were put up in the Rose and Crown Hotel in Colchester, described as "the oldest inn in the oldest town in England."

Right: Chris and Cathy Turner in London



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Shortwave Broadcasting

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ANGOLA Active shortwave stations as monitored: Benguela on 3354.7, 5040.2v, 6152.3v; Luanda on 3354.7 irregular, 3375.9, 5324.5; Huila on 4820.3; Saurimo on 4860.4 kHz (Vashek Korinek, South Africa, *Play-DX*)

ARGENTINA An intellectual breakfast chat-show from northern Argentina was heard from fade-in at 1040 UTC to fade-out at 1120, on 3149.7; harmonic, or point-to-point relay? (John Campbell, Cook Islands, Radio Netherlands *Media Network*) It's the third harmonic of Radio Pucara, 1050, Reconquista, Santa Fe province, operating at 1000-0400 (Daniel Camporini, Munro, Argentina, *Radio Nuevo Mundo*)

Radiodifusion Argentina al Exterior has a new address: Calle Maipu 555, Buenos Aires, replacing Ayacucho 1556 (Gabriel Ivan Barrera, RN Radio-Enlace) During summer time, all RAE broadcasts are one hour earlier, so English hours are at 1630, 2100, 0100, 0300; heard at 2100 announcing two frequencies rather than one--15345 and 11710 (BBC Monitoring)

AUSTRALIA Mike Bird, producer of propagation reports and *Communicator* suddenly announced his resignation in mid-November. Radio Australia's restructured programming now emphasizes a morning mix of short items, and a wide selection of feature programs in the evenings, Asian/Pacific time. *Communicator* has been rescheduled to Asia Friday at 10:30 and Sunday at 1430; to the Pacific Monday at 0730.

AUSTRIA *Shortwave Panorama*, Sundays at 1430, is stronger now on 11780 than parallel 13730 and 21490 (Ernie Behr, Ont.) None intended for North America, while 21475 at 1130 is, but that's too early beyond the middle of the continent.

BANGLADESH English external service from Radio Bangladesh has been monitored: 0800-0830 on 15195, 17855; 1230-1300 on 15195, 17850; 1815-1900 on 15255, 17805 (Supratik Sanatani, India, *OzDX*)

BRAZIL Radiobras has gone commercial; one night at 0238 on 11745, a soap factory was offering to sell you equipment to make soap in 4-gallon drums in your backyard, which you could sell to friends and shops! (William Westenhaver, Montreal, *World of Radio*)

CANADA In order to avoid conflicting with its own South American service, RCI has retimed *SWL Digest* on its North American service half an hour earlier, UTC Sundays at 0038 on 9755, 5960. Unfortunately, it now conflicts with *World of Radio* on WRNO....

The winter schedule of the Northern Quebec Shortwave Service confirms it's cut back to only one frequency, 9625 kHz all the way from 1158 to 0609 UTC. Much of it is in French, Cree, Inuktitut and other native languages, but there is still some English, especially weekends, including: *Quirks & Quarks*, Saturday 1700; *The Media File*, and *Inside Track*, Saturday 1800; *Sunday Morning*, Sunday 1400-1700; *Air Force*, Sunday 1300; *Best of Morningside*, UTC Tuesday-Saturday 0300. All these actually start a few minutes later after the news (via Zack Schindler, MI)

CHINA Radio Beijing's revised winter schedule to North America: 1100 and 1200 on 9665; 1400 and 1500 on 7405; 0000 on 9665 and via Mali 9770, 11715; 0300 on 17855 and via Mali 9770, 11715, Spain 9690; 0400 on 11695 via French Guiana; 0500 on 11840 via Canada (via *The DX Spread*)

COSTA RICA Radio For Peace International has been reporting news from El Salvador sometimes quoting Radio Venceremos, around 2200 and 0230 UTC. The antenna for 21566 can now be rotated, favoring eastern North America in the afternoon, western in the evening.

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TWENTY-NINTH
ANNIVERSARY OF
RADIO HAVANA CUBA

CUBA Radio Havana is again awarding five all-expenses-paid trips to Cuba to the winners of its essay contest; they'll spend two weeks touring the country; other prizes go to the next 20 best essays, deadline April 30. This year's topic: RHC changed its programming on Sept. 8, 1988. How do you evaluate the change? You should write first for an entry form, to Box 7026, Havana (via Tom Kuca, NY)

/non/ La Voz del CID was heard on a UTC Monday until 0300 with a program about santeria, the curious and proscribed blend of Afro religion and Catholicism (Henrik Klemetz, Sweden, *Radio Nuevo Mundo*) Presumably on 6305 or 9942 kHz.

CHILE Radio Minería, 1 kW on 9750, operates 1000-1130 and 1600-1700. Radio Nacional has cut power to 60 kW due to energy conservation, on 15140 at 0930-1200, 1530-1800 and 2200-2330; except Sundays 1330-2330 with sports. Radio Santa María de Coyhaique, 10 kW on 6030, Monday-Saturday 0900-0300; Sunday 1030-0200. DX program *Correo Internacional* is on Sundays at 1030-1058. Radio Patagonia Chilena, also in Coyhaique, 1 kW on 6080, broadcasts daily at 1000-2300. Radio Calama, 6100, is still off repairing transmitter. Radio Universidad de Concepción, 10 kW on 6135, daily 0930-2300, and relays news from Radio Minería at 0930-1130, 1600-1700, 2200-2300; plus 5-10 minutes of news at 1200, 1300, 1400, 1500, 1800, 2100. Also heard in Santiago is a new station on 1613.6 variable, Radio Emisora La Brisa, in Lampa, 30 km away, giving call CB161 (Gabriel Ivan Barrera, visiting Chile, *Radio-Enlace*)

DENMARK The government has now agreed to fund the external service in 1990; paperwork may delay the start of relays via Norway until mid-January (RN *Media Network*) We've still been hearing Denmark direct at 1600 on 25850. Transmissions have already been cut to 25 minutes, but mostly during the first half of hours, rather than the second when Norway will put them on. So maybe this is your last chance to hear Denmark direct: 1000 UTC on 11845, 1100 on 15165, 1200 & 1300 on 25850, 1400 on 17840, 1500 on 17865, 1600 on 25850, 1730-1830 on 15165, 1900, 2000 and 2100 on 15165, 2130 on 11845, 2200 on 9720, 2300 on 11845, 0000 and 0100 on 9720 (via DSWCI *Shortwave News*)

DOMINICAN REPUBLIC As predicted last month, Radio Clarín has replaced 11700 with 9950-variable, heard at 2315 past 2330 with its own programming, and at 0130-0200 with anti-Castro programming from La Voz de la Fundación, then back to baseball with Clarín (George Zeller, OH, *A*C*E*)

Crystal for 9950 was obtained from Miami and antenna reresonated for new frequency; clandestine program from Cuban American National Foundation is daily 0100-0200; CANF is much larger organization than CID, and somewhat less hostile, headed by Jorge Mas Canosa, also deeply involved in setting up Radio Martí and TV Martí. Old 50 kW transmitter initially run at 20-25 kW, but still putting a good signal into Miami; will resume full power once transmission line is replaced. We also hope to bring back a tourist-promotion program in English with Rudy Espinal, like the old *This Is Santo Domingo* at midnight 0100, and another Cuban clandestine, La Voz de Alpha 66, busted repeatedly in Florida, hopes to go on this outlet at 0200 to 0230. (Jeff White, FL, *RNMN*; *Radio Enlace*)

ECUADOR HCJB has made some programming changes. The

now once-weekly *DX Partyline* airs initially to North American Monday evenings, UTC Tuesday at 0200 on 15155, 11775, 9745 and 0600 on 11775, 9745, 6230, but listeners in other targets prefer to hear it on Saturday, so the repeats are then: 0800 on 9610, 6050; 0800 and 1030 on 6130, 9745, 11925; 2130 on 15270, 17790. The Dec. 25-30 edition reflects on the beginning of HCJB 58 years ago.

Musica del Ecuador has moved to UTC Monday at 0200, 0530, repeated from Sunday at 0800, 1030, 1900. *Saludos Amigos* is now scheduled: Tuesday 0800, 1030, 2130, UTC Wednesday 0200, 0600. The January call-in is under the auspices of *DX Partyline*, pre-empting other programming for one hour, Jan. 20 at 0730, and UTC Jan 21 at 0200 (via Brent Allred, HCJB; John Norfolk, William Westenhaver) Because of interference problems, HCJB has tested 11900 instead of 11775.

On the Fox TV Network, Garry Shandling, Sunday night, recently used HCJB as the punch line of a joke; there have been other electronic references, and Shandling is a ham, listed in the callbook (Will Martin, MO, *World of Radio*)

EQUATORIAL GUINEA *World of Radio* has been carried on Radio Africa since October, Thursdays at 2030 on 7189 (or occasionally 9582.65 variable). It may start as early as 2002, as monitored by Ernie Behr in Ontario and Bob Hill in Massachusetts; also scheduled Saturdays at 1215 on Radio East Africa on 9585, but no programs on this transmission as early as 0500 are audible in North America. The station has been getting reports from its target area, however, but unless we get substantial listener response direct from Africa and vicinity, we'll be forced to conclude this experiment.

ETHIOPIA /non/ Clandestine activity abounds; new is Voice of the Broad Masses of Ethiopia (not Eritrea, name of a previous station), heard at 0300-0345 on 7880, a frequency also used by Voice of Tigray Revolution. Believed from Sudan are these: Radio Voice of Ethiopian Unity on 9540-variable at 0400-0600 and 1800-2000 in Amharic, Oromifa, and Tigrigna. Former frequencies include 11180, 9435, 9425, 7100; it also announces 15789, 12000, 9677, 7142 and 5000 kHz, none observed (these happen to be exact conversions of 19, 25, 31, 42 and 60 meters); and Voice of Oromo Liberation, 9550-variable at 0330-0400 and 1630-1700; also around 9540, 9435/9440/9445 (BBC Monitoring)

GERMANY EAST One could hear Radio Berlin International evolving just as rapidly as DDR itself. The station director conceded that in the past RBI had emphasized the positive and minimized the negative, but pledged it would be objective from now on. Its opening and closing announcement changed from "building a state" to "redesigning a state." The revised winter schedule of English to North America, half-sesquihour broadcasts: 2200 on 9730; 2245 on 9730, 13690; 0045 and 0200 on 6080, 11890, 13690; 0245 on 6080, 11890; 0400 on 13690; 0245, 0400, 0445 on 11785, 15125; 0845 on 15240. Many of the Asian broadcasts can also be heard here off-the-back: 0615 on 11970, 15240; 1230 and 1345 on 11970, 15440, 17880, 21465; 1545 on 11970, 17880; 1000 on 11890, 15240, 17880, 21465. And the African service beamed to the Caribbean at 0330 on 13610 (via John Carson, William Westenhaver, Tom Kuca, Tony Fusco)

GUATEMALA La Voz de Nahuala added a second transmitter, on 5040, but heard much better on old 3360 at 1140 in presumed Quiche (Don Moore, MI, RCI *SWL Digest*)

HUNGARY Radio Budapest's *Hungarian History* has always been one of my favorites. It comes in very well on 9835 at 0200 UTC Wednesdays and Saturdays, and sometimes on Tuesdays at 1900 on 11910. The editors always come up with an imaginative way of conveying information, either with quotes from famous people, poetry, or some stirring music. Once they pretended to be the BBC to let us hear how the 1848 Revolution would have been covered by the foreign press. A recent program about the 1956 Revolution again presented the facts as if they were an independent broadcasting station at that time (Grant Lochmiller, IA, *Review of International*

Broadcasting)

ISRAEL Israel Radio's schedule shows a new service in Temanite (Southern Arabian Judeo-Arabic) at 1340-1355 UTC on 21790, 17575 (BBCM)

ITALY Radio Europe, nominal 7295 or alternate 7290, has been on 7287 to avoid interference, scheduled daily 0900-1300, including lots of tapes of American stations, both music/commercial, and WYFR in Italian. It may also appear on 27827 kHz (Dario Monferini, *Play-DX*) Italian Radio Relay Service moved back to 9865 from 9860, Sundays at 0800-1230 but extended past 1245 on the second Sunday of the month for a DX program in Italian and English by Monferini. After 9865 closes, 13790 has been tested (*RNMN* and *Sweden Calling DXers*)

JAPAN NSB, Tokyo, 9595, heard on a Thursday at 1600 with a joint program from the Money Radio Network in the U.S. (Ernie Behr, Ont. *World of Radio*)

KOREA NORTH The 11680 domestic service transmitter carries Pyongyang programming at 1958 to 1800 except at 0500-0600 when there are local programs from Kanggye (BBCM)

KOREA SOUTH Transmitter sites of clandestine stations to the North have been located by members of the Asian Broadcasting Institute. Voice of the People is on the northwest side of Seoul near the airport; directional antennas were seen, and 6600 kHz could be heard on a portable radio with antenna disconnected; 3.5 km to the south is Radio Echo of Hope; a sign in front of both, with armed guards, says "International Telecommunication Laboratory" (Radio Japan *DX Corner*, and *RNMN*)

KURDISTAN /non/ Voice of the People of Kurdistan was heard on 15050 at 1600-1730, also on 4080-variable to 4340 and 7100 (BBCM)

LEBANON A new station has been heard on 5977.5, Lebanese Radio in Arabic at 1520, saying it would continue until 2200. It supports General Michel Awn (BBCM)

LIBERIA A few low-power transmissions still show on the VOA frequency schedule: 15 kW on 9605 at 1830-1900, and on 21485 at 1800-2200 (RCI *SWL Digest*)

LIBYA The seldom-heard English service from Radio Jamahiriya still sends out undated schedules showing 15450 at 1800-1900 to Africa and Western Europe; 7245 at 2230-2400 to North America and Western Europe. Program titles range from the innocuous *Happy Music* and *Saturday Night Country*, to *Monopoly and Exploitation*, *The Scourge of Imperialism*, *Under the Shadow of the CIA*, and *US Intervention in Central America* (via Alan Roe, UK)

/non/ Voice of the Libyan People, 9500, in Arabic at 2100-2144, and from 0530 or 0600 on 11825; they refused to verify 15700, heard at 0500 in September. Also on 9500 is Voice of the People (Saut ash-Shaab) at 1800-1957 and 2200-2357 (Ernie Behr, Ont. *World of Radio*)

LITHUANIA Radio Vilnius announced new frequencies for English at 2259-2328: 7480, 9700, 15455, 15580 (15180?) (John Carson, OK, *W.O.R.*) The Lithuanian DX Club puts out a bulletin in English, *Banga*. Single copies cost \$1 or 3 IRCs, from Box 985, Vilnius 232300, Lithuania. The June 1989



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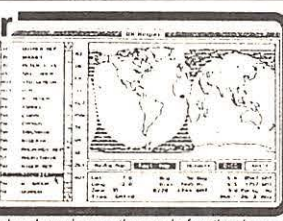
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Shortwave Broadcasting

issue featured a report on the end of jamming from Lithuanian states (via Christos Rigas, IL *W.O.R.*)

MONGOLIA Radio Ulaanbaatar's winter schedule shows expansion of Japanese at the expense of English; at 1200-1230 on 12025 and 9615, English occurs daily except Tuesday and Friday; days of week are ambiguous for others: 0910-0940 on 12015, 9615; 1445-1515 on 15035, 9645, 9575; 1940-2010 on 12050, 4080 (via Nick Terrence, NY)

MYANMAR /non/ Voice of the DAB (Democratic Alliance of Burma) has set up a station near the Thai-Burmese border on 7135 at 0130-0330, including some English (BBCM) It's the old Kawthoolei transmitter, 1 or 2 kW, blocked by BBC, at 0100-0300 (Victor Goontilleke, Sri Lanka, *RNMN*)

NETHERLANDS Though not intended for us, the Thursday 1451 broadcast of *Media Network* comes in well on 13770, 15150, 17575, 17605 (gh, Tucson) *Media Network* on Jan. invites listener participation on the future of radio until 2000--16 lines of text or a sesquiminate of voice phoned in to 31-35-724-222 (*RNMN*)

NICARAGUA La Voz de Nicaragua seemed to be trying to conceal its identity by calling itself only "La Voz", varying around new 5999 kHz from 0100 as late as 0600, 0627, or 0700 sign-off, and also from 1200; formerly on 6098.7. But it's under Moscow-via-Cuba until 0500 (Ernie Behr, Ont., *SWL Digest*) Also heard from 2200 until the Cuban comes on at 2345 (Tim Hendel, FL) And once slipped giving a full ID as La Voz de Nicaragua (Hendel, *DX Newslines* via *RNMN*)

NIGERIA Voice of Nigeria external service is active on 7255 only, at 0455-2200; English at 0455, 0800, 1400; French at 0600, 1200, 1800; Hausa at 0700, 1100, 1700 (BBCM)

PAPUA NEW GUINEA Radio Enga confirmed back on the air. 2410 kHz heard with an ID at 1216 during sing-sing program; at this time there was no audio from all the other PNG stations which are on 90 meters (Kevin Atkins, AL, *RCI SWL Digest*)

PERU Radio Eco, Iquitos, some days uses 5012.1, others 5097.2, heard between 1010 and 1050 (Kirk Allen, OK, *RCI SWLD*) Radio Huancabamba reactivated on 6280.9 at 0307-0350, announcing 6290 (Dave Valko, PA, *Fine Tuning*)

SUDAN English from Radio Omdurman, the Sudan Broadcasting Service, heard some days at 1530-1555 on 9550 instead of 9540; never heard here on 11625 -- see SYRIA (Ernie Behr, Ont.) Except for English at 1530, 11625 carries General Program in Arabic at 0355-0600 and 1005-1900 approximately. The station says 9435 is 10kW at Soba, used 1100-1400. See also ETHIOPIA /non/ (BBCM)

SWEDEN Radio Sweden programs: weekdays, *Weekday*--Nordic region news; then: Monday, sports and music; Tuesday, Sweden *Calling DXers*; Wednesday, *Business Life*, but 1st and 3rd Wednesday, *Dialogue*--Nordic nations and Third World; Thursday, *Horizon* on the last week of the month; Friday, Nordic pop music; Saturday, *Newsweek*; Sunday--1st, *Mailbag* and *Stamp Corner*; 2nd, *Spectrum*--culture and arts; 3rd, *Mailbag*; 4th, interviews about life today; 5th, a subject in greater detail (Gordon Darling, WDXC *Contact*)

TURKEY I had been monitoring Voice of Turkey for some years, and originally recommended 9445 to them for North America (though it now needs improvement on the west coast) This fall VOT generously invited my wife Dottie and me to join their contest-winners on a tour of Turkey. The station's facilities are very crowded now; they look forward to moving into a new complex in 1990. We took the opportunity to make some constructive comments on the long-haul future of VOT, to the Chief Engineer, Program Manager, and Director (George J. Poppin, CA, *Review of International Broadcasting*)

 **RADIO SWEDEN**
S-105 10 Stockholm

USSR Radio Station Peace & Progress, Moscow, English schedule until March 3: 1300-1400 to Southeast Asia on 7195, 7330, 7380, 9675, 11775, 15520, 15535, 17635, 17840: 1630-1700 to Southwest Asia on 6005, 7325, 9715, 15320; 1630-1700 to Africa on 9490, 9820, 11745, 11850; 2200-2300 to Europe on 4795, 6145, 7205, 7360, 9580 (Robert Chester, Radio Australia *DX Time*)

RADIO TASHKENT

Radio Tashkent, Uzbekistan, heard in English at 1200-1230 on all five announced frequencies: 15470, 11785, 9600, 9540, 5945; but none heard for the different program at 1330-1400 (William Westenhaver, PQ, *World of Radio*) The autumn-winter printed schedule showed 15470, 11785, 9715, 9600 and 73XX; programs include: *Life in the Village*, Wednesday 1200; *DX Program*, 2nd Saturday at 1330, repeated next Sunday at 1200; *Salom Aleikum Listeners' Club*, last Sunday at 1200, repeated next Saturday at 1330; *Literary Programmes*, 2nd Sunday at 1200, repeated 3rd Saturday at 1330 (via Alan Roe, UK)

Khabarovsk has added new 5965 and 6005 to old 4610; carries Mayak program except at 0700-1300 when there are local programs (Y. Kato and S. Aoki, Japan, Radio Japan *DX Corner*)

UKOGBANI It's a well-kept secret that American networks and many stations have an unlisted call-up phone number carrying the programming for advertisers to monitor, or even affiliates to broadcast. Now BBC World Service has gone public with this setup in Sydney, Australia, satellite-fed 24 hours and open to anyone who wants to pay the phone bill of 23 cents per minute off-peak, and 54 cents at peak hours, within Australia. Presumably anyone in the world who must hear the BBC at any cost may also call 0055-1434 (via Radio Australia *Communicator*)

BBC now uses out-of-band 5875 for Spanish at 0000-0200 and 0300-0430, replacing 11680 (William Westenhaver, PQ) Also at 0600 for Polish (Ernie Behr, Ont.)

USA Bush administration control of the VOA was all too obvious as the President held an impromptu news conference just before departing the non-summit in Costa Rica. On a Saturday morning at 1530 UTC, ABC, CBS, and NBC TV stuck with their lucrative kidvid, but VOA added many special frequencies from U.S. sites: 21725, 21670, 21500, 17755, 17710, 15250: and extended Spanish frequencies another hour: 11945, 13775, 15265, 17730, 21580, 21610. The next news conference a few days later on a weekday at the same hour was covered on TV, so none of the special shortwave frequencies were activated.

TWR Bonaire calls its diesel engines "ma" and "pa"; not to be outdone, WHRI in Indiana names its two transmitters Angel 1 (to South America) and Angel 2 (to Europe) (*World Harvest*, via John Carson, OK)

VENEZUELA The English segment from Radio Nacional has been confirmed, UTC Sunday at 0004-0015 on 9540.5, not heard on other announced frequencies, 5020, 11695, 11850 (Brian Alexander, PA, *Fine Tuning*) And 9540.5 has heavy interference from Prague on 9540.

YUGOSLAVIA English from Radio Yugoslavia: 1300-1330 on 15325, 15165, 11735; 1930-2000 on 17735 (typo for 11735?), 7215, 5980; 2200-2245 on 17735, 9660, 9620, 7215; 0100-0145 on 17735, 6005, 5980 (BBCM) Usually only one of each set is beamed toward, and audible in, North America.

Keep up-to-date with much more news about shortwave and other media in *REVIEW OF INTERNATIONAL BROADCASTING* and/or *DX LISTENING DIGEST*. Samples are \$2 each in North America, 7 IRCs or US\$3 each overseas airmail, US funds on a US bank. 10-issue subscriptions in North America cost US\$21, or both for US\$40, from Glenn Hauser, Box 44164-MT, Tucson, AZ 85733. Also monitor Glenn Hauser's broadcasts from Austria, Canada, Costa Rica, WRNO, as detailed in recent columns.

Broadcast Loggings

*Let other readers know what you're enjoying. Send your loggings to **Gayle Van Horn**, P.O. Box 98, Brasstown, NC 28902. English broadcast unless otherwise noted.*

0010 UTC on 4985

BRAZIL Radio Brasil central. Portuguese. Brazilian pops with breaks for chat and "Brasil Central" ID at 0017 UTC. (Frank Mierzewski, Mt. Penn, PA)

0045 UTC on 3995

GERMANY, FEDERAL REPUBLIC Deutsche Welle. German. Announcer duo with conversations to time tones at 0115 UTC. German folk music and station ID at 0128 UTC. (Frank Mierzewski, Mt. Penn, PA)

0125 UTC on 17660

PAKISTAN Radio Pakistan. Urdu. Talk until 0130 UTC, and native music. ID to include mentions of Karachi. (Frank Mierzewski, Mt. Penn, PA) Sign-off in progress on 11570 kHz at 2015 UTC. (Sam Wright, Biloxi, MS)

0140 UTC on 4955

BRAZIL Radio Marajoara. Portuguese. Brazilian pop vocals, sambas, and ballads. Local commercials, time checks, and IDs. -ed.

0154 UTC on 9875

AUSTRIA Radio Austria Int'l. Discussion on the Freud Museum and Austrian music program. (Michael Loran, Murrieta, CA)

0158 UTC on 11745

BRAZIL Radio Bras. Feature on evacuation plans for times of disaster, and discussion on ecology. (Robert Landau, Secaucus, NJ) (Michael Loran, Murrieta, CA)

0205 UTC on 3250

HONDURAS Radio Luz y Vida. Spanish. Music mixed with IDs, chat, and station program schedule. (Frank Mierzewski, Mt. Penn, PA) Monitored past 0310 UTC. (Michael Loran, Murrieta, CA)

0207 UTC on 17730

SWITZERLAND Swiss Radio Int'l. World newscast, followed by talk on Red Cross relief projects in Sudan and UN discussions on apartheid. "Dateline" show features a hybrid diesel auto tested in Germany. (Robert Hurley, Baltimore, MD) Heard on 9885/12035 kHz at 0408 UTC. (Michael Loran, Murrieta, CA)

0224 UTC on 11940

ROMANIA Radio Bucharest. Feature on the construction of medical research hospitals in Romania. (Robert Hurley, Baltimore, MD)

0237 UTC on 6455

CLANDESTINE Radio Farabundo Marti. Spanish. Lady with political commentary to musical tunes. Interference present throughout broadcast. (Harold Frodge, Midland, MI)

0303 UTC on 6470

CLANDESTINE Radio Venceremos. Spanish. Commentary on Cuba to Latin music show. Additional commentary and upbeat Spanish tune at 0315 UTC. Sign-off at 0317 UTC. (Harold Frodge, Midland, MI) Heard on 6239-6244 kHz with frequency drifting. (Sam Wright, Biloxi, MS)

0319 UTC on 3215

SOUTH AFRICA SABC. Station IDs and Elvis music program. Excellent signal. (Michael Loran, Murrieta, CA)

0335 UTC on 4820

HONDURAS La Voz de Evangelica. Spanish. Religious music and clear station ID at 0340 UTC. (Frank Mierzewski, Mt. Penn, PA) (Michael Loran, Murrieta, CA)

0345 UTC on 4875

BRAZIL Radio Nacional-Boa Vista. Portuguese. Newscast and "Boa Vista" ID. Musical interlude followed by station sign-off at 0358 UTC. (Frank Mierzewski, Mt. Penn, PA)

0350 UTC on 15485

NEW ZEALAND Radio New Zealand. Rugby commentary of Canterbury vs Auckland. Noted on parallel frequency 17705 kHz. (Harold Frodge, Midland, MI) Monitored on 17705/15435 at 0519 UTC. (Michael Loran, Murrieta, CA)

0358 UTC on 9735

PARAGUAY Radio Nacional de Paraguay. Spanish. "Musica de Paraguay" program to 0400 UTC. Closing announcements and sign-off at 0401 UTC. (Harold Frodge, Midland, MI)

0454 UTC on 4800

ECUADOR Radio Popular Independiente. Spanish. Fair signal for Ecuadorian music. Frequent IDs and local time checks. (Robert Landau, Secaucus, NJ)

0533 UTC on 5020

NIGER La Voix du Sahel. French. Fair signal for Koran recitations and children's choral music. Time pips and flute music at 0600 UTC. (Robert Landau, Secaucus, NJ)

0850 UTC on 3325

BRAZIL Radio Liberal. Spanish. Male announcer presents music program and "Radio Liberal" ID at 0903 UTC. (Frank Mierzewski, Mt. Penn, PA)

0905 UTC on 4940

VENEZUELA Radio Continental. Spanish. Male/female announcer duo with Latin music and conversation. Station ID at 0940 UTC. (Frank Mierzewski, Mt. Penn, PA)

0906 UTC on 11780

BRAZIL Radio Nacional do Amazonia. Portuguese. Excellent signal for religious programming and station ID as "Radio Bras." (Robert Landau, Secaucus, NJ)

0920 UTC on 4790

PERU Radio Atlantida. Spanish. Peruvian music tunes with breaks for IDs at 0930, 0934, and 0936 UTC, with rooster crows. (Frank Mierzewski, Mt. Penn, PA)

0931 UTC on 5975

COLOMBIA Radio Macarena. Spanish. Colombian vocals with frequent IDs and local time checks. Great signal quality. (Robert Landau, Secaucus, NJ)

0934 UTC on 6029.7

CHILE Radio Santa Maria. Spanish. Fair to poor signal quality for morning programming. Monitored from 0934-1050 UTC, when lost to strong co-channel carrier. (John Tuchscherer, Neenah, WI)

0945 UTC on 5050

ECUADOR Radio Jesus del Gran Poder. Spanish. "El Corazon del Pueblo Cristiano." Religious music and frequent IDs. Fair signal under moderate interferences. (Robert Landau, Secaucus, NJ)

0955 UTC on 4810.2

PERU Radio San Martin. Spanish. Station sign-on with national anthem. Station ID and promotional. Beautiful Peruvian vocals and flute instrumentals. (Sam Wright, Biloxi, MS)

1055 UTC on 21505

SAUDI ARABIA B.S.K.S.A. Arabic signing to clear ID at 1100 UTC. Arabic drama to 1117 UTC, with fair signal quality. (Robert Landau, Secaucus, NJ)

1105 UTC on 3365

PAPUA NEW GUINEA Papua Territory. Island music and request for listener's letters. Song title intros for music and station ID. Signal faded at 1138 UTC. (Frank Mierzewski, Mt. Penn, PA)

1130 UTC on 17575

MADAGASCAR Radio Netherlands relay. Fair signal with co-channel interference. Johann Strauss and Mario Lanza music selections. (Robert Landau, Secaucus, NJ)

1215 UTC on 2390

MEXICO Radio Huayacocotola. Spanish. Good signal for campesino music to fading at 1235 UTC. (Michael Loran, Murrieta, CA)

1235 UTC on 9655

THAILAND Radio Thailand. News items about Bangkok and music from Simon and Garfunkle. (Michael Loran, Murrieta, CA) Monitored sign-on with gongs, national anthem, ID/frequency schedule and music program. -ed.

1400 UTC on 4950

MALAYSIA Voice of Malaysia. English. Station ID as "Radio 4" with economic news and rubber price quotes. (Michael Loran, Murrieta, CA)

1420 UTC on 9580

AUSTRALIA Radio Australia. News and music to station ID at 1427 UTC. Programming announced as Asian service, followed by frequency/time schedule and newscast. (Frank Mierzewski, Mt. Penn, PA) (Michael Loran, Murrieta, CA)

2100 UTC on 17735

OMAN Radio Oman. Arabic. Station announcements to include an ID. Arabic prayers to 2116 UTC followed by sign-off routine and national anthem to 2128 UTC. (Frank Mierzewski, Mt. Penn, PA)

2145 UTC on 13660

IRAQ Radio Baghdad. Classical Arabic music and station ID introduces news briefs at 2158 UTC. (Bob Fraser, Cohasset, MA)

2207 UTC on 9625

CANADA Radio Canada Int'l. News on Canadian air crashes and violence in Johannesburg, South Africa. (Robert Hurley, Baltimore, MD) Monitored at 0008 UTC on 9755 kHz. (Michael Loran, Murrieta, CA)

2215 UTC on 9730

GERMAN DEMOCRATIC REPUBLIC Radio Berlin Int'l. "DX Club" show discusses the winter DX season for northern/southern hemispheres. (Robert Hurley, Baltimore, MD)

2220 UTC on 5035

CENTRAL AFRICAN REPUBLIC RTV Centrafricaine. French. Native African music with announcement breaks. Fair signal to severe interference at 2241 UTC. (Robert Landau, Secaucus, NJ)

2222 UTC on 4785

MALI RTV Malienne. French. Closing African tune to station sign-off. ID and national anthem to 0000 UTC. Poor signal quality due to interference. (Robert Landau, Secaucus, NJ)

2230 UTC on 7270

POLAND Radio Poland. News on recent Polish reforms and weather forecast. "DX Club" on station contest and Polish pop music. (Robert Hurley, Baltimore, MD)

2242 UTC on 4915

GHANA Ghana Broadcasting Corp. African vocals to English ID and newscast at 2245 UTC. Religious programming and music. (Harold Frodge, Midland, MI)

2300 UTC on 15330

FRANCE Radio France Int'l. French. DJ with tape of "Power Play" rock music program from WSAS FM station. Monitored to 0000 UTC. Audible also at 2340 UTC. (Robert Hurley, Baltimore, MD)

2320 UTC on 11660

BULGARIA Radio Sofia. "Scanning the Pages" program discussing Bulgarian poetry. Audible on parallel 15330 kHz. (Bob Fraser, Cohasset, MA)

2350 UTC on 9705

PORTUGAL Radio Portugal. Program on Portuguese folk music, including "Song For One Who Dreams" and "Ballad For No One." (Robert Hurley, Baltimore, MD)

Utility World

Larry Van Horn

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Tracking the Soviet Space Program

One of the more interesting activities to monitor in the shortwave utility bands are the Soviet SESS tracking ships. By monitoring the various SESS net frequencies, the average monitor can determine what is happening within the Soviet manned space program. This month our intrepid SESS reporters Sam Ricks and Tom Roach check in with a Utility World intelligence report on the Soviets.

The Soviets kept six of their spaceflight tracking ships at sea during the early summer of last year, monitoring the mothballed MIR (Russian for Peace) space station. Eventually, three tracking ships returned to their home ports, one was sent to the Pacific, and two were left in the Atlantic.

In July, however, SESS ship's Gagarin and Belyayev were joined by the Akademik S. Korolev and Kosmonaut G. Dobrovolski. This was about a week before the military mission of the US shuttle Colombia. At that time the Kosmonaut V. Volkov entered the Atlantic heading south.

With the launch of an unmanned Progress-M resupply spacecraft to the MIR space station, the SESS shortwave frequencies became more active. Even though there was a lull in manned activity aboard the Soviet MIR, SESS shortwave nets were active each day in the international marine band frequencies.

All this information came as result of monitoring the Soviet SESS shortwave frequencies in the international marine bands. The key to tracking Soviet manned space activity is regular monitoring of these active frequencies. Also, using such publications as *Aviation Week and Space Technology* helps to keep track of things. This weekly magazine is usually available at local libraries.

A typical message commonly seen on SESS frequencies appears below. This type of message is a "look-up angle" message. I have abbreviated the message header of this message. In addition to the information presented on line one of the message, the message header would also reflect which ship the traffic is destined for.

```
A-507 09019 W0001 010001 007000 011410 18801 0000
011430 18625 0114
011500 12300 0330
011530 17805 0615
011536 17631 0659
011600 17031 0948
011630 15753 1425
011700 13607 1930
011730 10506 2101
011800 07752 1655
011830 06114 1146
011900 05832 0740
011906 05014 0659
```

Sam Ricks believes column 1 indicates the orbit-time (Moscow time) the spacecraft passes over the particular ship the message is sent to, i.e.: 011410 = orbit 1, time 1410 hours (1110 hours UTC). Column 2 is the azimuth in degrees/minutes from the ship to the spacecraft. Column 3 is the elevation in degrees/minutes from the ship to the spacecraft.

Ricks points out that you can tell when the Soviets are

Table I
Soviet SESS Ship Search Ranges

8295.0	---	8425.0 MHz
12495.0	---	12530.0 MHz
16665.0	---	16707.0 MHz

Specific frequencies used in the past include:

8297.5, 8298.5, 8299.0, 8299.0, 8417.0, 8418.0, 12511.0, 12522.5, 12523.0, 12524.0, 12526.0, 12526.5 AND 16703.0

Look for 170.50 RTTY traffic

tracking a satellite in deep space type orbits -- their tracking tables become very precise. When they are tracking objects further out in space, such as interplanetary probes, the data elements are in degrees, minutes, seconds. Tracking tables for MIR, which is in near earth orbit, are in increments of 1 minute, with azimuth and elevation in tenths of a degree, a lot less precise.

I must point out that the tracking table listed above for satellite A-507 is not for the MIR, but for a satellite SAM believed was Cosmos 1989, a high altitude navigation satellite.

You can monitor the Soviet SESS fleet. Look for their CW and RTTY data in the marine shortwave bands. Table One gives some general ranges to look for this very interesting set of ships.

As always I appreciate Sam Ricks' efforts to keep *MT* readers up-to-date on the latest happenings of the Soviet SESS ships and their traffic. For readers who would like more information on monitoring the Soviet space program and the Soviet SESS fleet, I invite you to check out the latest edition of *Communications Satellites*. It is available from Grove Enterprises.

Beginners' USN Ship Designations List

Fraser Bonnett says "I'm now hooked on Utes" and he has bought his second receiver to prove it. In his initial letter to this column, he sent a list of US Navy ship designations and

Table II
USN Ship Designations

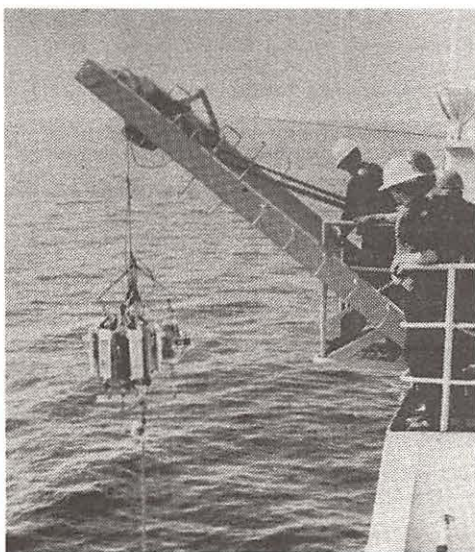
AD Destroyer Tender	AE Ammunition Ship
AFS Combat Store Ship	AGF Command Ships
AO Ollers	AOE Fast Combat Support Ship
AOR Replenishment Oiler	AR/ARL Repair Ship
ARS Salvage Ships	AS Submarine Tender
ASR Submarine Rescue Ship	ATS Salvage Tug
AVM Guided Missile Test Ship	BB Battleship
CG Guided Missile Cruiser	CGN Guided Missile Cruiser
CV Aircraft Carrier	Nuclear
CVN Aircraft Carrier Nuclear	DD Destroyers
DDG Guided Missile Destroyer	FF Fast Frigate
FFG Guided Missile Frigates	IX Helicopter Landing
LCC Amphibious Command Ship	Trainer
LHA Amphibious Assault Ship	LKA Amphibious Cargo Ship
LPD Amphibious Transport Dock Ship	LPH Amphibious Assault Ship
LSD Dock Landing Shi	LST Tank Landing Ship
MCHD Medium Class Hopper Dredge	TXXX Military Sealift Command
WXXX Coast Guard Cutter	

asked what they meant. Lo and behold 20 days later, Fraser answers his own question and provides our readers with Table Two.

If you are not familiar with Navy ship designations you might want to make a copy of the above list and keep it by your receiver or next to your MT. It will aid you in ID'ing the type of ship your listening to or reading about in MT's Ute World loggings section.

International Ice Patrol to start work

Starting either either March or in April depending upon conditions, the International Ice Patrol will commence its annual service of guarding the waterways in the Atlantic. They basically patrol the southeastern, southern, and southwestern limits of the regions of icebergs in the vicinity of the Grand Banks of Newfoundland.



The International Ice Patrol, formed after the wreck of the Titanic, relays conditions in icy Atlantic waters.

IIP

Reports of ice in this area will originate from passing ships and aircraft and from flights flown by the International Ice Patrol (IIP) aircraft. IIP will broadcast two message bulletins each day and a daily radio-facsimile chart, containing ice information to inform ships of the extent of the estimated limits of all known ice. Broadcasts from IIP will occur as indicated in Table Three.

Many thanks to Mr. Charles Brown aboard the S/S Guadalupe, amateur callsign N4SO, for the above list. Next month I will publish a list of FAX stations sending IIP information.

Was Doakes Real?

Our intrepid reporter in Okinawa, Mike Hardester recently dropped a note to say hi and let me know he's back in Okinawa (with no radio yet) and ask me this:

"Was the 4577.0 credit to Joe Doakes, J Klingenfuss Drive, Mars, PA for real? I know that Mars, PA is real...it's just the contributor's name and the J Klingenfuss Drive is a bit hard to swallow."

Well, Mike, believe it or not, this isn't made up by me. While the post mark wasn't from Mars, the rest of the information is as you see it above. And to add insult to injury Joe Doakes didn't bother to let me know who he really is. I am sure it is all made up by that individual and he wishes to keep his identity a secret even from me.

Table III

Broadcast Station	Time of Broadcast	Frequencies
CG COMSTA Boston-NIK	0500, 1100, 1700	518 kHz NAVTEX ICE BRDCST
	2300	
CG COMSTA Boston-NIK	0018	5320, 8502, 12750
	1218	8502, 12750 All FEC Mode
Modes listed below are all CW		
CG COMSTA Boston-NIK	0050	5320, 8502, 12750
	1250	8502, 12750
Canadian CG St. John, Newfoundland-VON	0000, 1330	478
Canadian Forces Mill Cove-CFH	0130,0330	438
		4255 (2200-1000)
		6430 Continuous
		8697 Continuous
		12726 (1000-2200)
		16926.5, 22397.5 On req
LCMP Broadcast	0800-0900	8090 Continuous
Norfolk, VA-NMN/NAM	1500-1600	12135 Continuous
NAR/NRK/AOK/GXH/NGR	1600-1700	16180 Continuous
	2100-2200	20225 (1200-2359)
Thurso, Greenland-GXH	same times as above	7504.5 Continuous
		12691 (0800-1900)
		4001 (1900-0800)
Keflavik, Iceland-NRK	same times as above	5167 (1900-0800)
Key West, FL-NAR	same times as above	5870 Continuous
Rota, Spain-AOK	same times as above	5917.5, 7705 Continuous
Nea Makri, Greece-NGR	same times as above	4623, 13372.5 Continuous

Speaking of such subjects, and since I have had a lot of requests for this, now comes the Utility World logging guidelines. Some of the major things to include in your log include:

- Frequency: kHz/MHz makes no difference to me, if you can put your logs in frequency order fine but please -- please -- no cut up strips. I live in the computer age and do not need or want strips. Handwritten loggings are fine so long as I can read them.
- Callsign/s noted on air: This is especially important if you are sending me an unknown and asking me or the readers to identify your log. Callsigns and some of the material you intercepted are about the only way we all can help ID an unknown.
- Time: Report all time in this column in UTC. *Monitoring Times* has readers all over the world and we must use a time zone that can be understood by everyone.
- Location: If known. This must include city, state/country (unless U.S.).
- Mode: Please indicate mode of operation. If FAX/RTTY I need you to specify IOC-Drum rotation speed/Shift in Hertz-Baud rate, if known.
- Details: This can vary from a simple 'CW CQ marker' to a detailed transcript of the transmission monitored. I leave this up to the judgment of the reporter. As I mentioned in callsigns, for an unknown details are paramount.

I hope this clarifies my logging usage policy. I would like to thank each and every one of you who support this column as it moves into its third year in these pages. I have really enjoyed serving you, Bob and Judy Grove and Larry Miller on the staff of the finest communications magazine around, *"Monitoring Times"*.

Now until next month, it's time to check into what you are hearing in the Utility World...

Utility Loggings

Abbreviations used in this column

All times UTC, frequencies in kilohertz. All voice transmissions are English unless otherwise noted.

AM	Amplitude modulation	ISB	Independent sideband
ARQ	SITOR	LSB	Lower sideband
CW	Morse code	RTTY	Radioteletype
FAX	Facsimile	UNID	Unidentified
FEC	Forward error correction	USB	Upper sideband
ID	Identification		

- 4225.9 XFM-Manzanillo Radio, Mexico with CW marker. (Ed Jelf, Lexington, KY) *Time, Ed? -ed.*
- 4231.7 FUF-French Naval Radio Fort de France, Martinique, with V CW marker. (Jelf, KY)
- 4275.0 TBA5-Izmir Naval Radio, Turkey, heard in CW at 0015 with a CQ marker. (Doyle, CT)
- 4515.0 Civil Air Patrol frequency heard in USB with check-ins at 1100 each morning. Conversation centered around the installation of repeater at Hemmingway Air Base. (Robert Montgomery, Levittown, PA)
- 4710.0 Tango Whiskey-RAF Neatishead, England, working 6DF at 0137 in USB. (Doyle, CT)
- 5535.0 Saudi 055/Saudi 037 working London at 0219 in USB. Gave ETAs and SELCALs. (Tyke, UK) *Welcome to the column, Tyke. Hope you report often. -ed.*
- 5598.0 Shanwick Aeradio working German Air Force 007 in USB at 0228. Told to contact Reykjavik on 133.0. (Tyke, UK)
- 5729.0 RAF-Architect with weather observations for the UK at 0100 in USB. (Doyle, CT)
- 6577.0 Moderate QRM on channel, Spanish female 5/5 numbers station. NY ARINC chatting with San Juan and indicated that the source of the QRM had been traced to Nicaragua and a protest had previously been lodged. (Robert Confino, Douglasville, PA) *Number station freaks, take note of this log, very interesting indeed. -ed.*
- 6600.0 Female reciting continuous string of Spanish numbers; definitely sounded like someone "live" (shouting into mike) with very poor audio quality at 0246 in AM. (Confino, PA)
- 6690.0 RAF-Eaton?? working Zombie 7055, 7056 at 0117 in USB with tracking info. Mentioned MLQ, this station active over two hours with this exercise. (Doyle, CT)
- 6720.0 BHI calling Skyking at 0051 with coded traffic on Victor. (Doyle, CT) *SAC Victor?? -ed.*
- 6761.0 Tallyho calling Skybird for radio check at 0146 in USB. Called this frequency Sierra 391. (Doyle, CT)
- 6840.0 Numbers station in English, female repeating three digit number three times for several minutes, heard ten tones then a 3/2 digit number series began at 2308. (Confino, PA)
- 6870.0 FAA stations: KDM50 (Hampton, GA), KVA93 (Birmingham, AL), and KOR82 (Orlando, FL) checking into net and exchanging signal reports. (Frantz, GA)
- 6955.0 English female number station with 3/2 digits heard at 0607. (Frodge, MI)
- 7482.0 Spanish female number station heard at 2300 in AM. (Frodge, MI)
- 8336.8 NOJ-US Coast Guard RADSTA Kodiak, Alaska, sending Alaskan waters forecast at 0750 in 75 baud RTTY. (Brian Johnson, San Diego, CA)
- 8388.0 3FCM-MV Mar Courier with VCS with message to agent at 2255 in CW. (Steve McDonald, Port Coquitlam, British Columbia, Canada)
- 8465.0 Numbers and letters station heard in English at 0234, most in groups but long list. (Confino, PA)
- 8486.0 Alleycat working Drysack in USB at 1108. (Dix, NY)
- 8571.0 UFN-Novorossiysk Radio, USSR, with DE CW marker at 0018. (Dix, NY)
- 8595.0 DZK-Manila (Bulacan) Radio, Philippines, heard at 0955 with a CQ CW marker. (Dix, NY)
- 8606.0 ZRD-Cape (Simonstown) Radio, South Africa, sending a CW V marker at 0026. (Dix, NY)
- 8650.0 NMO-US Coast Guard COMSTA Honolulu, Hawaii, sending a CQ CW marker at 0918. (Dix, NY)
- 8690.0 TFA-Reykjavik Radio, Iceland, with a CQ CW marker at 2154. (Dix, NY)
- 8718.9 NMN-US Coast Guard COMSTA Portsmouth, Virginia, working CGC Esconaba at 2231 in USB with a phone patch to Norfolk Rescue. Aircraft on the scene of a capsized vessel. (Doyle, CT)
- 8778.0 Female Spanish numbers station with five digit numbers at 1200. (Montgomery, PA)
- 9017.0 Honeydew working Graymare and Polo Game at 0021 in USB with radio checks. Referred to the frequency as X-904. (Doyle, CT)
- 9024.0 Heard around 1700 scrambled voice then "Ladybird, this is Deerhorn on Hotel Fox . . . in clear, request backup voice." Then heard "Yeger, Yeger, this is Sidecar, would you go green (scramble-ed.) at this time." In USB mode. (Gerald Trimble, S. Rockwood, MI) *Welcome to the column, Jerry. Please report often. -ed.*
- 10025.0 Unid station transmitting a male computerized voice in USB at 2129. "Climbing to 29" and the number went up one each minute till 2200, then "climbing to 00" again to 60 and fadeout. (Doyle, CT)
- 10046.0 4XZ-Haifa Naval Radio, Israel, sending a V CW marker. (Jelf, KY) Also heard at 0234. (Kimpton, Ontario, Canada)
- 10555.0 AX134-Darwin, Australia, with FAX weather chart from 2240-2300. (Mr. Deutsche Welle-At Sea)
- 10573.0 Several tactical stations sending traffic in CW including: 9AC/50X/9VN/4RO/4YA from 2200-2220. (Mr. Deutsche Welle-At Sea)
- 11205.0 F4K calling S0O, CoC, and U6D at 0145 in USB. NASA frequency. (Frantz, GA)
- 11212.0 MKL-RAF Scotland heard at 2002 with a CW ID, then time pips. (Doyle, CT)
- 11214.0 Chevy 1, 2, 3, 4, 5, 6, 7 working unid station. Units checking in and exchanging signal reports, then all quiet at 1730 in USB. (Frantz, GA)
- 11214.0 Century 40 working Trenton Military with a phone patch to McGuire AFB, New Jersey. Boeing 707 (tail number 0559) arriving McGuire at 1945. 25 crew, classified destruction facilities required on landing plus fuel and transport bus. Frequency designator mentioned for this channel as "Charlie 6." (McDonald, BC, Canada)
- 11222.0 Stockholm Aeradio working Iberia 9061 at 2235 in USB with phone patch for crew member catching Iberia 965 to Miami. (Doyle, CT)
- 11246.0 Heard at 1615 in USB, Recky 41 working MacDill with a phone patch to Bergstrom AFB. During the phone patch, heard Recky 41 tell Bergstrom he had been trying to contact them on 14651.5. The latter one is not a frequency I have seen reported. Do you have any idea about its use? Any idea who Recky 41 is? (Jack Waterman, Mundelein, IL) *Jack, Recky 41 is probably a SAC aircraft. The frequency you mention is a new one on my list; it is probably a SAC discrete for that mission. Nice catch. -ed.*
- 11300.0 Aeradio Nairobi, Kenya, working Speedbird 65 with position report in USB at 0213. (Dix, NY)
- 11387.0 Singapore Volmet heard at 2240 in USB with aviation weather. (Mr. Deutsche Welle-At Sea)
- 11566.0 English female numbers/letters station heard in AM at 2204. (Frodge, MI) *Probably one of the Israeli Moshad stations. -ed.*
- 11600.8 Unid station repeating "de target A" in CW at 1335. (Dix, NY)
- 12380.0 Two fishermen using XXX rated language talking about their jobs, no IDs at 0230 in USB. (Montgomery, PA)
- 12533.0 UPGL-General Cargo ship Frants Bogush working UFB-Odessa at 0135 in CW with position report. (McDonald, BC Canada)
- 12541.0 UPIO-Kompozitor Rakhmaninov RO/RO cargo working UFB in CW at 1942 with position report. (McDonald, BC Canada)
- 12565.0 YTHX-Yugoslav General Cargo ship Suma Dija working WCC with position report sailing for Gibraltar in CW at 1433. (McDonald, BC Canada)
- 12586.0 DUFH-MV Balsa working WNU in CW at 1344. (McDonald, BC Canada)
- 12592.0 9VRR-Vehicle Carrier Venus Diamond working NMN with AMVER position report in CW at 1956. (McDonald, BC Canada)
- 12663.0 CBV-Valparaiso Radio, Chile, heard at 1039 with a CQ CW marker QRM from FUM. (Dix, NY)
- 12687.0 JCT-Choshi Radio, Japan, heard at 0902 with a CQ CW marker. (Dix, NY)
- 12691.4 FUX-French Naval Radio La Porte Reunion Island sending the usual V CW marker at 2138. (Dix, NY)

BUGGED???

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- 12700.0 XSD-Guangzhou Radio, PRC sending a CQ marker/ CQ traffic list at 1024. (Dix, NY) At 1940. (Mr. Deutsche Welle-At Sea)
- 12709.0 FJP23-Noumea Radio, New Caledonia, with a CW CQ marker at 2145. (Mr. Deutsche Welle-At Sea)
- 12727.5 XSW-Kaohsiung Radio, Taiwan, heard at 1014 with a CQ CW marker. QRM from LGJ. (Dix, NY)
- 12779.0 D2E51-Luanda Radio, Angola, heard at 2320 in CW with CQ marker. (Doyle, CT)
- 12781.0 YUR-Rijeka Radio, Yugoslavia, heard at 2321 in CW with QXs. (Doyle, CT)
- 12862.5 PKE-Ambolna Radio, Indonesia, sending a CQ CW marker at 1040. (Dix, NY) *Nice catch, Jack, not reported very often.-ed.*
- 12906.0 DZJ-Manila (Bulacan) Radio, Philippines, with a CW CQ marker at 0931. (Dix, NY)
- 12907.5 VIX-Sydney Radio, Australia, at 2152 with a C CW marker. (Dix, NY)
- 12916.5 HLG-Seoul Radio, South Korea, heard with a CQ CW marker at 1147. (Dix, NY)
- 12945.0 ZLP-Irirangi Naval Radio, New Zealand, with a V CW traffic marker at 1033. (Dix, NY)
- 12972.0 DZZ-Manila Radio, Philippines, heard with a CQ CW marker at 1130. (Mr. Deutsche Welle-At Sea)
- 13031.0 VRN-Cape D'Aguiar Radio, Hong Kong, heard at 1013 with a CQ CW marker. (Dix, NY)
- 13042.5 PJC-Curacao Radio, Netherlands Antilles, sending CQ CW marker at 1059. (Dix, NY)
- 13177.7 Unid stations using LSB in marine USB radiotelephone band. No calls heard, personal and business chatter. Mentioned skeds on 5070-nil heard. Apparently they shift freely up and down adding one or two to the last three digits of the frequency. Anyone help with this one? (Kimpton, Ontario) *I don't have anything listed in my files for either, David. Readers, any help?-ed.*
- 13199.6 CA17E-Hanga Roa Air, Easter Island, with RTTY RYs at 850/50R at 0320. (Kimpton, Ontario)
- 13204.0 Apolusa Radio working Bangor 01 at 1853 in USB. Also heard contacting Buzzard, Radium in reference to the position of 15 tanks, trucks, circle target, etc. (Doyle, CT)
- 13247.0 Flintgun working Dork 62 at 1810 in USB with signal check. Referred to frequency as Whiskey 109 and gave second frequency of 5383 with no designator. (Doyle, CT)
- 13312.0 Active US Customs channel heard using USB at various times. The usual stations heard (i.e.-Slingshot, Motel, etc). (Kimpton, Ontario)
- 13354.0 Honolulu ARINC, Hawaii, heard working Clipper 81 and Hawaiian 12 at 0129 in USB with a position report. (Doyle, CT)
- 13380.1 TIM-Limon Radio, Costa Rica, heard at 1319 with a CQ CW marker. (Dix, NY)
- 13424.0 Illegal net, fishing fleet (pardon the pun) discussing weather and sea conditions. Also gave frequencies 7877 and 7980 for the next two nights' communications. Comms in USB at 0245. (Frantz, GA)
- 14306.0 Heard at 1153 in USB the Czech container and cargo ship LABE in the Gulf of Mexico heading for Houston with a load of oats. The operator gave his position as 26/43N and 89/20W. He was a ham radio operator and was working stations up and down the east coast. His call sign was OK4NH/MM. (Kurtz, MN)
- 14358.0 Noted a military net on this channel for the past two days. Net control is usually "Alpha Foxtrot." They have been interrogating ID track 2170, etc. Uniform 8 seems to be a command. Maybe controlling aircraft as I hear "Juliet 4" saying he will be "off in seven to ten mikes (minutes.-ed.). (Bruce Blackburn, Grand Junction, CO)
Interesting, Bruce, considering this is a navy MARS channel. Probably a NORAD, DEA, or Customs channel. Bears watching.-ed.
- 14367.0 BAF-Beijing, PRC with FAX chart from 1900-1940. Good signal. (Mr. Deutsche Welle-At Sea)
- 14775.0 Adhesive working an unid aircraft, also Tristep transmitting a Skyking broadcast. (Kimpton, Ontario) *This one is a SAC channel that uses floating designators, David.-ed.*

- 15011.0 RCC Halifax and Rescue aircraft 111 working at 2016 in USB. Frequency not listed in my current SAR frequency list or Grove 5th edition Shortwave Frequency directory. (Fred Doyle, Alberta, Canada)
- 16775.0 DZHU-MV Vigan working NMN with an AMVER position report in CW at 1627. (McDonald, BC Canada)
- 16803.0 VGLN-Ice class Oil tanker Irving Arctic working VCS with AMVER position report in CW at 1625. (McDonald, BC Canada)
- 16808.0 H9GB-Bulk carrier Baltic Trader working WCC in CW at 1845. Leaving New Orleans. This is the ex-Seaward Ace. (McDonald, BC Canada)
- 16974.0 SPE81-Szczecin Radio, Poland, heard at 1536 with a DE CW marker. (Dix, NY)
- 16978.4 3BM-Mauritius (Bigara) Radio heard at 0425 with a CW CQ marker. (Dix, NY)
- 17014.0 UEK-Feodosiya Radio, USSR, sending a CW DE marker at 0431. (Dix, NY)
- 17175.2 A9M-Bahrain Radio heard with a CW DE marker at 1142. (Dix, NY)
- 17927.0 CA17E-Hanga Roa Air, Easter Island, heard at 2255 sending RTTY RYs using 850/50R. (Kimpton, Ontario)
- 17937.0 Lima Aeradio working Eastern 977 with SELCAL and Eastern 987 with position report at 2147 in USB. (Doyle, CT)
- 20167.0 Concourse working Possible on frequency Whiskey 116. (Frantz, GA) *Thanks for the new Whiskey freq, Bill. Battles, here is one for your notes. Sounds like airborne command post type call signs.-ed.*
- 20404.7 CLP1-Havana, Cuba, with a CW QSV/V marker at 1858. (Kimpton, Ontario)
- 20621.7 5KM-Bogota, Colombia, heard at 1835 with a RTTY RYs transmission using 850/75N. (Kimpton, Ontario)
- 20970.0 Canadian Military MARS stations VVN9 (Nicosia, Cyprus), VVX9 (Golan Heights), VDH9 (unknown), CHAL (unknown), and 806 (Naval vessel) heard at 1555 in USB. (Frantz, GA)
- 22326.0 JNA-Tokyo Radio, Japan, heard at 1455 with a CQ CW marker. (Dix, NY)
- 22361.0 HEB-Berne Radio, Switzerland, heard at 1859 with a QSV in CW. (Doyle, CT)
- 22384.0 URL-Sevastopol Radio, Ukraine SSR, at 1820 with a CW CQ marker. (Doyle, CT)
- 22419.0 LPD91/34-General Pacheco Radio, Argentina, sending a V CW marker at 1147. (Dix, NY)
- 22542.0 FUM-Papeete French Naval Radio, Tahiti, at 1850 in CW with a CQ marker. (Doyle, CT)
- 22581.0 UFN-Novorossiysk Radio, USSR, heard at 1904 with a CW ID then a short RTTY tone. (Doyle, CT)
- 23972.0 JMG-Tokyo, Japan, sending Meteor data via RTTY at 0231 using 904/50N. (Kimpton, Ontario)
- 24132.8 Unid station carrying out simplex RTTY comms at 0355. Noted very brief transmissions and have been unable to ID. Anyone have anything on this? (Kimpton, Ontario) *Not here, David, nothing in my files.-ed.*

The Scanning Report

Bob Kay

P.O. Box 98
Brasstown, NC 28902

PRISON PEN PALS

"I am an inmate at the Augusta Correction Center in Craigsville, Virginia," the letter began. "Currently, I am being held in an isolation cell for providing prison radio frequencies to *Monitoring Times*."

Naturally, I was intrigued by Mr. William K. Smith's opening remarks. His letter further stated that all of his radio hobby magazines, frequency lists, and other scanning material had been confiscated.

I wrote to the warden at Augusta and asked him if Mr. Smith's allegations were true. Since the warden never responded, I can only assume that inmate Smith was telling the truth.

As an inmate, Mr. Smith must certainly conform to the rules and regulations set forth by the penal system. However, isolating an inmate for passing on frequencies that can be found in widely published scanner directories does seem rather harsh.

The remaining portion of Mr. Smith's letter continues:

The Augusta Correctional Center is a maximum security facility operated by the Virginia Department of Corrections and houses over 1000 inmates.

The radio equipment currently used consists of General Electric PE series hand-held units that are used in control rooms, cell blocks, guard towers, and security teams.

The master control room uses a Motorola remote base to communicate with other units within the prison. Naturally, the control room can also contact other law enforcement agencies that are located in the surrounding communities.

Correctional officers working within housing units utilize a "body alert" system. The system transmits tone encoded bursts that travel between the officer and the main dispatch terminal.

The prison utilizes the following frequencies:

F-1 460.530 F-4 458.050
F-2 453.050 F-5 458.275
F-3 453.275 39.12 Prison-to-prison communications

The F-1 frequency is monitored around the clock and is the primary channel. Exclusive communications with the warden take place on one of these frequencies, but the exact channel is unknown.

I would like to hear from readers concerning the frequencies used at the Augusta correctional center. I also enjoy writing about radio communications of other interests. My address is: Bill K. Smith KA3MFN, Augusta Correctional Center 152541, P.O. Box 1000, Craigsville, VA 24430.

The way I see it, Bill enjoys being in trouble. After all, he is in prison. And don't forget, Bill wrote the above letter after he had been placed in isolation. With this in mind, I figured Bill would appreciate some additional ideas that would help to keep him in isolation.

Bill, if you have a standard FM/AM radio, try spreading apart the small coils that are located near the tuner; this will enable you to "scan" the aircraft band. If you have a cable ready television and want to monitor cellular car phones (doesn't everyone?), try tuning between channels 80 and 90.



MT, The Scanning Report, and Consumer Reports magazine -- Learn more about the ruckus in this month's column.

And last, but not least, you may want to scratch the following federal prison frequencies into your cell wall: 170.875, 170.925, 170.065.

MT Treasure Hunt

The holidays are over. Winter has arrived, and most of us are not looking forward to receiving our credit card statements. Here in the northeast it is too cold for outside activities, and it's dark by 5:00 p.m. Does it sound depressing? Would a free scanner radio from Ace Communications help to get your adrenaline flowing again? If so, welcome to the first MT Treasure Hunt of the new year!

The AR-950 is a 100 channel scanner radio with five separate banks consisting of 20 channels. The banks are lettered A through E and can be individually accessed by pressing front panel mounted buttons. The AR-950 provides user selectable AM/FM mode, delay and lock-out controls, and a rear panel mounted dB switch.

The scanner comes equipped with a mobile mounting bracket, a removable 12 volt wiring harness, and a 12 volt wall transformer for base installation.

The AR-950 is an ultra lightweight scanner radio that can be mounted in a wide variety of applications. In addition, the AR-950 is an ultra sensitive scanner that covers the following bands: 26-50, 108-136, 138-174, 406-512, 830-950 MHz. The sensitivity of the AR-950 is matched only by the ICOM R-7000. I personally found that the AR-950 is ideally suited for monitoring the low power, cordless phone band. With the AR-950, I've monitored cordless conversations that were not detected by my other scanners.

Before I give you the clues, there is one additional thought that should be mentioned. In past Treasure Hunts, I've sent post cards to readers who provided the wrong answers. This year, incorrect entries will simply be discarded. If you want your answers verified, provide an SASE.

All entries that correctly answer the questions will be placed in a box, thoroughly mixed, and one lucky winner will be selected by a random drawing. If you feel that multiple entries will improve your odds of winning, feel free to do so.

1. Provide the nationwide primary command post frequency of the Secret Service.
2. Provide two frequencies that are used nationwide by the Office of Engraving and Printing.
3. What image frequency would I enter into a Bearcat 800 XLT if I wanted to monitor 405.00 MHz?
4. The cordless phone base unit transmits a duplex signal. True or false?
5. Name a scanner radio that offers a CTCSS, Tone Squelch option.

Okay, that's all of them. Send your answers to the Treasure Hunt, P.O. Box 98, Brasstown, NC 28902.

Frequency Exchange

From Mount Vernon, New York, Tony Sexton wrote in to "set the records straight." Tony claims that the following frequencies cannot be found in scanner frequency guides:

460.275 Mt. Vernon Police F-1
 460.075 Mt. Vernon Police F-2
 155.220 West Chester Co., ambulance
 153.830 Mt. Vernon Fire
 481.780 Narc Channel
 154.570 Cross Country Shopping Center F-1
 154.600 Cross Country Shopping Center F-2
 464.370 Saint Andrews Security F-1
 469.762 Saint Andrews Security F-2

Tony indicates that he has confirmed these frequencies with a Bearcat 100XLT. Mount Vernon readers with further revisions or corrections are invited to respond.

Federal listeners in Rhode Island and Massachusetts will appreciate the following list that was submitted by Bob Murphy:

OUT	IN	
167.6625	162.7625	FBI, Providence, RI
167.2625	162.975	FBI, Eyeter, RI
167.7125	162.975	FBI, Providence, RI
167.7625	162.975	FBI, Shannock, RI
167.3875		New simplex channel numerous locations
167.6125	163.9875	FBI, Worcester, MA
167.2375	162.975	FBI, Foxboro, MA
167.4625	162.975	FBI, Fall River, MA
167.2875	Simplex	FBI, Worcester, MA

Bob also toured the Coast Guard Cutter, *Escanaba*. He copied the following frequencies from a Motorola, MX 100 that was mounted on the bridge:

162.125	Unknown agency
166.435	Input to U.S. Customs repeater
162.325	Unknown, DVP in use
162.400	Unknown
162.475	Unknown
162.550	Unknown
165.2625	Unknown

In return for his contribution to the Frequency Exchange, Bob asked if someone could provide him with a frequency listing for Vermont.

Since we are visiting the New England area, let's take a peek at an anonymous list of Massachusetts and New Hampshire security frequencies:

153.350 Ingersoll Rand, Nashua, NH
 153.080 Ingersoll Rand/Impco, Nashua, NH
 151.775 BASF Bedford, MA
 151.775 TASC Reading Ch A
 151.865 TASC Reading Ch B



The AR950 is the next Treasure Hunt prize -- All you guys already have one, right?

483.8125 TASC Reading Simplex, seldom used
 154.515 Miter, Bedford, MA
 154.600 Grossmans, Hanover, MA
 461.200 Genrad, Concord, MA
 462.325 Digital, various in New England
 464.875 Lahey Clinic, Burlington, MA
 464.375 New England Exc. Park, Burlington, MA
 154.57 Burlington Mall, Burlington, MA
 484.3625 New England Life, Burlington, MA, seldom used
 464.500 Burns Security, hand-helds, seldom used
 418.300 U.S. Postal Service South Station, Boston, MA
 417.200 Federal Protection Service, nationwide (Boston)
 464.325 Arthur D. Little, Cambridge, MA
 123.075 AM Arthur D. Little Heliport lights
 154.54 Mariner's Village, Spinaker Point, Portsmouth, NH
 153.245 Data General, Portsmouth, NH Ch 1
 153.275 Data General, Portsmouth, NH Ch 2
 131.425 AM Data General, air-to-ground in New England
 464.350 Data General, Durham, NH
 153.230 Simplex Wire & Cable, Newington, NH
 152.42 Newington Mall, Newington, NH
 463.975 Foxrun Mall, Newington, NH
 464.225 Foxrun Mall, Newington, NH
 464.950 Pheasant Lane Mall, Nashua, NH
 151.895 Lechmere, Nashua, NH

Are you enjoying the cold climate of the New England area? If so, our next stop will be right up your alley -- Welcome to Edmonton, Canada. Gordon Needham has provided the Canadian Government Publishing Center address: Supply and Services, Ottawa, Ontario, Canada K1A 0S9. The folks at the center will provide a copy of the Canadian Spectrum Allocations Guide for \$3.00. Ask for catalog #CO 22-33/1989 or later.

Scanner buffs interested in the 1990 flight demonstration schedule for the Canadian Snow Birds can write to: CFB Moose Jaw, Bushell Park, Saskatchewan, S0H, ONO. Here are a few Edmonton Airport frequencies that Gordon included in his letter.

CFB NAMA0 (North of Edmonton)

118.000	Tower	325.900
121.800	Ground	275.800
119.000	Radar Approach	
134.100	Radar Backup	349.600
121.100	Advisory	238.300
121.500	International Emergency	
149.140	Base Operation	

149.140 Crash and Rescue
 149.350 Military Police
 149.440 Base Transportation
 149.650 Air Show Frequency
 282.800 Search and Rescue
 294.700 Skyhawks Jump Team
 383.700 Air-to-ground

Anyone wishing to contact Gordon can do so by writing to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902.

Ready to visit a warmer climate? Let's travel down to Dallas, Texas, and check in with Ben Saladino. Ben has sent in over 900 frequencies for the Dallas/Fort Worth area. Better yet, Ben claims that he has personally confirmed every frequency contained in the list. His monitoring station includes three PRO-2004s, a PRO-30, PRO-34, Regency MX 4000 and a Bearcat 950. Here is a sample of Ben's list:

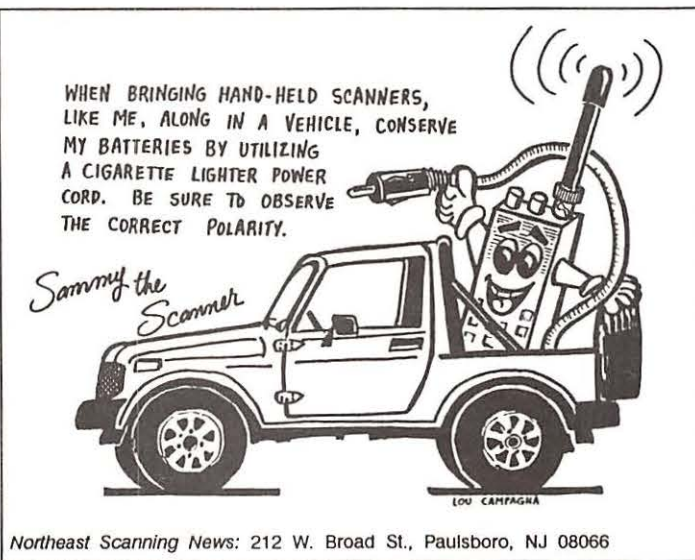
300.7500 Air National Guard, Dallas NAS
 34.50 Army Reserve Helicopters, Dallas NAS
 34.70 Army Reserve Air operations
 123.4750 Bell Helo flight test
 143.9000 Civil Air Patrol repeater in
 36.10 Army Reserve, Mineral Wells
 462.225 Bell Helo security
 165.2375 U.S. Customs F-1
 166.4375 U.S. Customs F-2
 140.10 Flight line operations, Dallas, NAS
 155.7150 Dallas, Constables
 154.9050 Texas, Alcoholic Beverage Commission
 159.270 Texas, Parks and Wildlife
 855.9625 Dallas, "Cab Cops"
 173.5125 Carswell AFB, Aircraft readiness
 413.450 SAC Crew Alerting

If you are interested in the complete 19 page list, send an SASE (business size, #10) to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902.

That wraps it up for this month, folks. I hope you don't mind being left in the state of Texas. After all, I could have left everyone in the freezing temperatures of New England.

Scanning the Rolling Stones

When the Rolling Stones rock band came to Baldwinville, New York, Stan Fenney monitored the entire performance on 161.670 MHz. According to Stan, the frequency was active before, during, and after the concert. Total transmission time



was approximately nine hours. Stan further stated that while the audio quality was marginal, it was better than missing the performance. Better yet, it was free.

Although Stan didn't explain how this happened, I would guess that it was a remote feed to a television or radio station that was inadvertently left in the transmit mode.

Smiling for Connecticut Radar

In the October 1989 "Scanning Report," I offered a list of Connecticut Photo Radar locations. The units were reported to automatically photograph speeding vehicles.

Wayne Schulz of East Hampton, Connecticut, claims that the units appear to be small traffic control boxes and nothing more. Upon further examination, Wayne found that the boxes were empty, with no apparent opening for a camera.

For now, the idea of receiving a ticket based on photographic evidence seems remote. If you want to personally investigate the locations, I'll send them to you for a SASE. While we are waiting for the results of this reader investigation, I'd be interested to hear from anyone who has received a photo speeding ticket.

The Secret Village

The village of River Forest is located in the suburbs of Chicago. Walt Kelly reports that River Forest is a multimillion dollar community that is home to several MOB figures.

The River Forest police department frequency, according to Walt, was a well-guarded secret. However, Walt recently discovered that the confidential frequency was 151.4025. But wait, there's more. The emission mode is FM sideband.

Cordless Invaders

In my March 1989 column I explained how to specifically tune a long-wire antenna for the cordless phone bands. As most of you already know, the cordless bands are one of my favorite monitoring targets.

When *Consumer Reports* reviewed cordless phones in their December 1989 issue, they mentioned *Monitoring Times* and my column to warn cordless phone owners about third party eavesdroppers.

Although I applaud *Consumer Reports* for attempting to warn consumers about cordless monitoring, I'm afraid the warning will not be taken seriously. I've personally warned several of my neighbors about cordless phone monitoring. I've even repeated their conversations! However, they just keep on using the things. I can't figure it out.

In case you are wondering, *Consumer Reports* listed the Southwestern Bell Freedom Phone, FF1725, as having the maximum range. If you would like to monitor the Freedom Phones in your neighborhood, send an SASE and I'll send you my cordless antenna plans for free! Happy monitoring.

Be Kind, Don't Respond

For the next two months I don't want anyone to enter the January/February contest. If I don't get a response, I'll keep the AR-950 for myself. So, be kind to me. Forget about the Treasure Hunt, allow me to keep the radio, and everybody will be happy.

Thanks, I knew you guys would understand.

Bob Kay's *The Citizen's Guide to Scanning* is now available from DX Radio Supply and Grove Enterprises.



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PLL All Band LW-MW-SW-FM
• 45 Memory Keyboard Entry
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Introductory Priced \$229.95

NEW

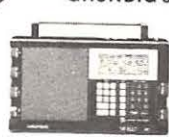
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R71A-This is our best seller. ICOM R71A has all the features one expects in a world class receiver. All mode AM, SSB, CW, RTTY, FM (OPT). Complete coverage. 1 to 30 MHz. 3 Filter positions, direct keyboard entry. 32 memory channels. PLL tuning in 10 Hz steps for exact frequency. Many ICOM options plus EEB high performance package. (CALL)

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R7000-There is nothing to compare with the R7000 under \$12,000. This is the most sophisticated V/UHF receiver ever offered to the public. No wonder it's our best selling V/UHF receiver. All mode AM, SSB, CW, FMW, FMN-25 to 2000 MHz (20 kHz to 2 GHz w/NOVEX FC7100), direct keyboard entry. 99 memory channels, many ICOM options plus EEB options and high performance package deal. (CALL)

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JRC-NRD

A high-class, general coverage receiver with expandability looking to the future. The NRD-525 will change your shack into a new universe! 0.09 MHz to 34 MHz. Pass band shift. 200 memories. Direct keyboard entry. AM, FM, CW, SSB, RTTY, SSB. Notch filter. V/UHF converter option. Filter options.

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The KENWOOD R5000 is the new high performance receiver from the leader in communications technology. 150 kHz to 30 MHz. 100 memories. Keyboard entry. AM, FM, USB/LSB, CW, FSK, VHF 108-174 Opt VC20.

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The KENWOOD R2000 150 kHz to 30 MHz. 10 memories. AM, FM, SSB, CW. VHF 118-174 MHz opt VC10.

R2000 \$649.95 + \$10 UPS



YAESU

FRG8800 offers functionality and operating convenience for the serious shortwave listener. 150 kHz to 29.999 MHz. Direct keyboard entry. Dual Clocks/Timers. Wide/Narrow Filter. 12 Memories. AM, SSB, CW, FM. VHF 118-174 MHz option \$119.95.

FRG8800 \$649.95 + \$10 UPS



FRG9600 VHF/UHF General Coverage Receiver. 60-905 MHz. 100 Memories. FRG9600 \$529.95 + \$6 UPS

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The Satellit 650 International is the ultimate in German crafted portable radios. Excellent audio. 510 kHz to 29.999 MHz. 24 hour clock/calendar. 3 Bandwidths. 60 Memories. AM, FM, SSB, CW. Keyboard Entry. PLL Control. Nicad Battery Option.

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ICFSW1S



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what's new?



New Edition Air-Scan

It's the most comprehensive guide to aeronautical communications ever compiled. And it's available in an all-new 5th edition.

Covering 2 to 30 MHz, 30 to 50 MHz, 108 to 174 MHz and communications over 406 MHz, *Air-Scan* is the perfect frequency guide for anyone who enjoys aero monitoring.

Included is control towers, ground control, weather communications, approach-departure frequencies, aero telephone call frequencies, airport security, military frequencies and much more.

The new edition also includes private airports outside the aero bands, plus all of Canada, Caribbean, Pacific, and North Atlantic frequencies plus VHF military.

From Air Force One to Air Traffic Control, *Air-Scan* covers it all in 192 pages. The all new 5th edition is just \$14.95 plus 1.25 bookrate or 2.50 UPS from DX Radio Supply, P.O. Box 360, Wagontown, PA 19376. *Air-Scan* ships in January.

Yipes! That Scanner is Loud!

A company called Emulation Associates in Stamford, Connecticut, is offering a module that "maintains the volume level of amateur, business, CB, marine radios and scanners."

According to the company, REGEN-1 will "amplify signals and attenuate a strong audio signal, keeping volume at a nearly constant level regardless of incoming signal strength and reduce un-squelched FM hiss."

REGEN-1 is compatible with sets using audio attenuator-type volume controls and attaches with adhesive foam backing. Simple instructions are included.

To order, send your check or money order for \$39.95 to Emulation Associates, 520 Glenbrook Rd., Ste 203-G-12, Stamford, CT 06906. For more information call 203-356-1632.

Radio Facsimile from ACE

ACE Communications of El Toro, California, has introduced a stand-alone radio facsimile terminal. The terminal, called the WX-1000, is designed to produce paper copies of various radio facsimile services, such as NOAA weather charts, press photos, NFAX, and even satellite weather pictures.

While the WX-1000 is a stand-alone, it does require audio from a shortwave

receiver or S-band receiver capable of picking up facsimile signals.

The built-in high-resolution 24 pin thermal printer produces crisp images and is capable of grey scale necessary for APT (Automatic Picture Transmission) by satellite.

For more information, write to ACE Communications, 22511 Aspen Street, El Toro, California, 92630.



Fox Tango Sold

International Radio and Computers, Inc., of Port St. Lucie, Florida, is now the exclusive distributor for Fox Tango crystal filters and other products. IR&C's address is 751 South Macedo Blvd., Port St. Lucie, Florida 34983.

Cellular Telephone Directory

Is there a cellular telephone service in your area? This fact-filled little book from Communications Publishing Service will tell you. Designed for cellular users on the move, *The Cellular Telephone Directory* is a state-alphabetized compendium of every cellular phone area in the United States, Canada and many foreign locations as well.

For each major area, a map is given along with a footprint of primary coverage for cellular mobile telephones.

Adjacent text describes instructions for placing local and long distance calls, billing rates, and special emergency and informational numbers for both wireline and non-wireline services.

An appendix provides a list of area codes, alphabetized by city and state, as well as an area code map. An informative cellular glossary and a useful list of toll-free 800 numbers for the

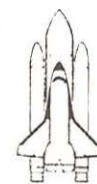
traveler are included.

The Cellular Telephone Directory, Second Edition, is available for \$14 postpaid from Communications Publishing Service, Box 500, Mercer Island, WA 98040-0500; credit card orders call 206-232-3464.

Space Almanac

"Delightfully informative; easy reading; comprehensive" -- These descriptions aptly apply to the *Space Almanac* by veteran writer Anthony R. Curtis, editor of *Space Today* magazine.

Two inches thick and containing a half-million words, *Almanac* delivers just what the title promises, a detailed, chronology of all things space: New knowledge about our solar system and the universe, descriptions of



space missions, profiles of astronauts and their experiences, calendars of upcoming space launches, historical highlights, and summaries of foreign space programs as well as American.

What's the safest way to view sunspots? How does the Search and Rescue satellite work? What prevents a weather imaging satellite from becoming useless when a lamp burns out? Who was Musa Manarov? How much did the joint Mars flight cost? What are our plans to return to the moon and visit Mars? It's all here.

The advertising promoting the book said, "You won't want to put it down." Amazingly enough, they're right; it's great reading.

Find out for yourself by sending \$19.95 plus shipping to Arcsoft Publishers, PO Box 132, Woodsboro, MD 21798; phone 301-845-8856.

A Guide to Facsimile

With the ready availability of photofacsimile equipment now reaching the consumer market, more listeners than ever are monitoring the shortwave bands, copying weather maps, news photos and other graphic material being transmitted by government and commercial agencies worldwide.

While the majority of such transmissions are navigational in nature--satellite weather photos, maritime conditions, sea ice and other warnings--other types of visual material is sent as well, enough to provoke the curiosity of thousands of avid FAX fans.

Joerg Klingenfuss describes the ninth edition of his *Guide to Facsimile Stations* as "The most comprehensive, reliable and up-to-date manual in existence." As immodest as this claim appears, it is probably quite accurate. It has been some time since another FAX directory has seen print.

Profusely illustrated with sample weather maps, charts, scales, photofaxes and tables, the guide also contains an excellent sourcebook for equipment and supplies for the facsimile receptor.

Additional chapters explain the formats of various types of transmissions, including how to interpret the various symbols and abbreviations which accompany them. Almost 400 facsimile frequencies, along with transmission schedules, addresses and an alphabetized list of call signs are included.

The *Guide* is available for \$19.95 plus \$1 shipping from Universal Shortwave, 1280 Aida Dr., Reynoldsburg, OH 43068 or from the author at Klingenfuss Publications, Hagenloher Str. 14, D-7400 Tuebingen, Federal Republic of Germany (see ad in this issue for pricing).

To have your new product or book considered for review in *Monitoring Times*, send it to Editor, 140 Dog Branch Road, Brasstown, NC 28902.

2 things ... that are not fun about scanning:

1. Not having enough money to buy all the neat, new equipment available, and
 2. Not being able to organize your frequency information the way you would like it.
- Well, I can't help you with the first item, but let me tell you about something new on the market for the second one.*

EAGLE'S VIEW FREQUENCY MANAGEMENT SYSTEM (FMS)

FMS is a new software package for IBM PC's that will give you instant access to any information you want.

- o Organizes & searches by Frequency, Agency, Call, City, & more!!!
- o Large, friendly display will show you any information you need.
- o Keeps track of frequency entries for up to 4 scanners.
- o Database size limited by the size of your disk.
- o Allows you to save calls, frequency codes & acronyms used with each entry.
- o Includes fields for Latitude, Longitude, & bearing from your QTH.
- o Soon to come! - Control your ICOM R7000 or R71 from your database.
- o And More !

System recommendations - IBM PC XT/AT and compatibles with at least 384K memory. Hard disk strongly recommended. Supports monochrome or color displays (CGA, EGA, VGA).

- 2 disks include program & database structures
- \$89.95 for entire package with manuals
- Demo disk available for \$8.95, manual available for \$15.00
- Please specify your memory size and floppy or hard disk.

Send check or money order to Eagle's View, 5019 Yorkshire Dr., Ft. Wayne, IN 46806-3551 (Include 5% tax if you live in Indiana)



1990 Forecast: ICOM to Rise in Receiver Market

A premature announcement by a European distributor gave British readers of *Practical Wireless* magazine a sneak preview of ICOM's 1990 releases. While ICOM America representatives confirmed that several new products are planned for introduction second quarter of next year, they are not intended to replace current ICOM models which will remain in production.

One of the new offerings is a shirt-pocket-size scanning receiver with continuous 150 kHz through 1300 MHz frequency coverage and AM/FM reception. Touting 100 memory channels, the tiny unit looks like the immensely popular IC2S transceiver. The pocket receiver has a choice of 11 search step increments (0.5/1/5/9/10/12.5/15/20/25/30 kHz) and sports both an S meter and a tuning knob! Other functions include a power-save circuit and a clock timer. Cost for the high-end scanner is expected to be in the \$600 range.

For the shortwave enthusiast who can't afford the niceties of the R71A general coverage receiver, ICOM has taken out a few of the ancillary functions and will offer a scaled-down version of that popular standard. Still loaded with important features like all mode reception, 99 memory channels, a dual-function noise blanker and full 30 kHz-30 MHz frequency coverage, the receiver is intended to fill that price gap between low-priced portables and higher-priced professional radios like the R71A.

Finally, for the mobile listening enthusiasts, there will be a full-frequency-coverage scanning radio with 100 kHz-1856 MHz frequency range and 100 memory channels. Similar to the little pocket receiver this mobile version will have multiple search increments (1/5/8/9/10/12.5/20/25 kHz) and will include 20 separate search ranges as well as a multifunction clock timer.

It is not expected that any of these radios will be available before introduction at the Dayton Hamvention. *MT* will publish hands-on reviews of these three new receivers as they become available.

A Beginner's First Twenty Countries

Ah, New Year! One door closes, another opens. A time for looking back and then setting one's sights firmly on the future.

A big part of my annual reminiscence is to go over the old log books. I usually start with a gander at my accomplishments over the past year, but somehow I always get drawn all the way back to those first few yellowed pages of information. Everything was new and any catch was a great catch. Jon Cohen, WB2KKS, once defined DX as "any country you haven't logged yet."

Knock off the nostalgia stuff and get to the point, Uncle Skip!!

Well, for starters, this is a beginner's column. To be sure, everyone has to start some place. So for all those folks just starting to diddle the dials as debuting DXers, Old Uncle Skip shall wax nostalgic over his first twenty shortwave broadcast loggings giving fodder and fuel for all those folks who finally received that world band radio for Christmas but who just don't know where to tune.

All you old timers can stick around too; you might just give a listen to some station you have skipped over for years. It's like running into an old friend. So with that, I give you --

UNCLE SKIP'S GUIDE TO YOUR FIRST 20 COUNTRIES!!!

1. THE UNITED STATES OF AMERICA

Talk about stating the obvious! Actually, this logging reminds me of how much change has gone on in shortwave broadcasting over the years. Back when I first logged the good old US of A, all you could chase down was The Voice of America and the Armed Forces Radio and Television Service.

Well, these days you need a satellite dish to grab AFRTS, but good old VOA is still out there. Also, you will find quite a few other shortwave broadcasters in the US now. WINB, WRNO, WHRI, WMLK, WWCN, WSHB, WCSN, WYFR, and KUSW are all indications of how the commercial radio establishment has embraced shortwave. And lest we forget, you can send QSL reports out to these guys for regular surface postage.

2. CANADA

Just like its sister to the south, Canadian shortwave outlets have blossomed over the years. In addition to Radio Canada International, you will find the regional network stations worth listening to. This would include stations such as CFCF, CHNS, and CKWX.

There are several highly charged political

and environmental issues between the United States and Canada (eg. acid rain). Listening to both sides of the story and both countries' efforts to resolve the problem is very interesting indeed.

3. PEOPLE'S REPUBLIC OF CHINA

Now here is a nation that has gone through some changes! When they first hit my log, they were good old Radio Peking, loaded down with fairly strong anti-American rhetoric. Then one day Richard M. Nixon stops in for cocktails and Peking becomes Beijing, the "running dog" rhetoric turns into a travel brochure and the postman stops looking askance when my *China Today* magazine arrives.

Just when things were looking up, the tanks rolled in and a decided chill has dropped over the airwaves. My suggestion is to keep on listening, folks, because this is one place in the world where history is happening by the hour.

4. FEDERAL REPUBLIC OF GERMANY

West Germany's primary outlet to the world is Deutsche Welle. Their "World News" programming is always a joy to listen to. It's kind of fun to be at a party, blending in with the conversation about current events, dropping lines like "Well, Deutsche Welle indicated that..." It makes you sound real cosmopolitan.

See the point, Compadre? You have only logged four stations and your horizons are already expanding.

5. CUBA

Radio Habana is a neat logging in that you can grab it on shortwave and also tune in its parallel broadcast at several points on the mediumwave band. Of course, this is another country whose relationships with Uncle Sam ebb and flow.

A few years back they were fairly upset at the establishment of Radio Marti. The Ministerio De Comunicaciones responded by powering up a mess of transmitters that made life pretty miserable for mediumwave listeners, especially in the southeastern United States. Things have calmed down for the moment but it never hurts to keep an ear -- or in the case of TV Marti, an eye -- peeled.

6. ISRAEL

Kol Israel is your gateway to the Middle East. It also seems to have the widest variety of English language programming coming out of that region of the world. So, if you are not up on your Arabic, give it a listen.

7. CZECHOSLOVAKIA

Radio Prague is an excellent station to go after in order to put eastern Europe in your log. My early loggings go back toward the days of the "Prague Spring." Again, this is a corner of the world that is going through dramatic changes.

8. RUSSIA (U.S.S.R.)

I don't think you even need a frequency guide to come up with this logging. Just tune around a bit, anywhere on the band. Radio Moscow is sure to be there somewhere. With shortwave broadcast as their primary way to reach the whole world, the U.S.S.R. has some mighty powerful transmitters.

If you are an aficionado of jazz, you will find some very interesting music programs in that idiom. Of course, keeping track of Glasnost is an excellent radio pastime. Since these folks have stopped their annoying habit of jamming, some of those transmitters have even been turned over to the broadcasting service. Needless to say, their programming has grown very sophisticated over the years.

9. NETHERLANDS ANTILLES

Radio Nederland is probably the station that gives all beginners their first lesson in DX geography. Many folks call the Netherlands "Holland."

The trick is that when you usually receive Radio Nederland in the United States, you are hearing its signal from Bonaire, an island in the Netherlands Antilles, which is in the West Indies. Actually, it's an easy 4500 miles from Holland. So, as you can see, it's not always easy to figure out where to put the pin in the map when you are dealing with relay stations.

But geography aside, this station's "Media Network" program remains one of the best programs in shortwave radio.

10. AUSTRALIA

You have to get up pretty early in the morning to become a great DXer. Well, not that early. But if you take some time to tune around with your morning cup of coffee, I am sure you will run across this logging. Both Radio Australia's overseas service and ABC Perth show up in the early morning. Just be careful you don't try to go through your day by their weather report. We are talking a whole different hemisphere here, folks!

Intermission

Hey, Uncle Skip! You are not giving out any frequencies or program times. What's the deal?

HCJB

HERALDING
CHRIST
JESUS'
BLESSINGS

To: Thomas James Auye

☒ We wish to thank you for your reception report. We have found it correct and hereby acknowledge with this verification card.

Date of reception 13th June 1976

Time-GMT 1745 - 1800

Transmission was heard on 17750 kHz

☐ We feel sure that you have heard one of our transmissions, but the information given was not sufficiently complete or correct to receive full confirmation.

We appreciate your interest in our programs and invite you to write again.

Sincerely yours,

Sam Rowley
Director of Engineering

HCJB is a powerful South American broadcaster

Simple, Sancho. Remember, Bunky, you are reading *Monitoring Times*! Just flip a few pages south of here to Kannon Shanmugam's "Program Guide" or Greg Jordan's "Frequency Section" and you will be able to determine the most up-to-date place to go searching for your first twenty countries.

11. UNITED KINGDOM

In Uncle Skip's humble home, there has always been at least one receiver tuned to BBC. You won't win any DX contests with this logging but you will get hours of enjoyable programming. Think of "The Beeb" as a trusted old friend who is always there even when other DX is fleeting. Sound as the Pound and strong as the Tower of London. Their shortwave listener's program "Wave-guide" can be interesting and is geared more toward the beginner than many other DX shows.

12. SWITZERLAND

The Swiss Broadcasting Corporation's external service, Swiss Radio International, is another station that is known for excellent current events and news broadcasting. If you are interested in the study of languages, this is one of several international broadcasters who produce some of their programming in Esperanto.

13. GERMAN DEMOCRATIC REPUBLIC

Things are definitely hopping, politically, in East Germany these days, what with a significant portion of their population crossing the border to become West Germans. It's a pretty safe bet that Radio Berlin International will be there throughout the changing political structure. RBI is probably best known for its DX Club. Tune in for details.

14. ECUADOR

For most beginning DXers, HCJB, La Voz De Los Andes, remains their first introduction into the world of international religious broadcasting. It is also most folks' first South American logging. Operated by the World Radio Mission Fellowship, Inc., I remain convinced that when they power up their 500 kW transmitters all the lights in the city of Quito dim!

15. EGYPT

Radio Cairo will serve up another taste of the Middle East for all who will listen. They tend to broadcast more in Arabic than English to North America but you can still find plenty of interesting English language programming.

16. VATICAN CITY

This is a very small country! When I show people my QSL card collection, they often get a kick out of my Vatican Radio card that pictures a microwave tower shaped like a giant cross. Needless to say, this is a religious broadcasting station.

17. GREECE

The Hellenic Broadcasting Corporation's foreign service, The Voice of Greece, will bring the budding DXer in touch with the Mediterranean world. They have somewhat limited broadcasting directed to North America, but they remain a fairly easy catch for the beginner.

The Best* Just Got Better!

The Eavesdroppers™ now includes our new Zap Trapper™ Electronic Gas Tube Lightning Arrestors. Receive-only design shunts damaging transients to ground at only 1/7th the voltage buildup of the available 200 watt transmit-type arrestors, providing maximum solid state receiver protection.

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- Completely assembled and ready to use
- Only 42" overall length
- 8 trap circuits permit reception on all shortwave bands, 1.1-90 meters
- All connections soldered and enclosed in ultrasonically-welded, hermetically-sealed trap covers
- Includes 50' of 450 lb. test nylon rope

Model T includes 100' twinlead feedline

Model C includes weatherproofed center connector for your coax & coax sealant

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- UPS for lower 48 states \$4.00
- COD add \$3.00, IL add 7% sales tax
- Foreign shipping quoted

*"The best...built like an antenna should be." -Larry Magne in *World Radio TV Handbook*

*"Our best seller." -EEB in their recent ads and catalogs

"Now in use in 45 countries." -Gifford Shortwave in 1983

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18. SOUTH AFRICA

Another station in a politically charged region of the world. Once you have QSLed these folks, you go on a mailing list that lasts forever. I received regular program schedules for five years! Great stuff, if you are looking for something exotic in your mailbox.

19. ALBANIA

This is an interesting logging even for the beginner. Below Yugoslavia and to the west of the bootheel of Italy lies this teeny socialist republic that never seems to get along with anyone. At least that's how it seems when you listen to their broadcasts. For such a small place, they have an enormous external shortwave service. An easy, if somewhat odd, catch.

20. BRAZIL

We finish off with another trip to South America for the purpose of logging Radiobras via their 250 kW signal.

Are we having fun yet?

Every serious listener has a beginning. Everyone will have a different first twenty countries. Like your first car and your first kiss, you never forget them. If you want to shoot for one or two off Old Uncle Skip's list, please drop me a line and let me know. Remember to have fun along the way!



Monitoring Military Aircraft

Over the years, the federal frequency bands have yielded some of the most exciting monitoring to be found on the radio spectrum. But it wasn't until recently -- specifically the introduction of programmable scanners -- that the job of finding new frequencies was made easy.

TABLE 1
225-400 MHz Aircraft Band

230.400	DOE aircraft
236.600	Air Force Military Control Towers
237.900	Coast Guard search and rescue channel
239.800	Air Force Metro: weather channel
240.600	Coast Guard rescue beacons
241.000	Army/National Guard channel
242.200	Air Force Tactical Air Command
243.000	Worldwide emergency channel -- all agencies
250.800	Navy Blue Angels air-to-air channel
252.100	Air Force refueling channel
252.800	Air Force Tactical training channel
255.400	FAA Flight Service Station channel
257.800	Military aircraft to FAA Control Towers
264.800	Space shuttle chase aircraft
272.700	FAA Flight Service Station channel
273.500	Air Force Thunderbirds air-to-air channel
275.100	Coast Guard rescue beacons
275.200	Military contractors
282.500	Air Force Tactical Air Command channel
282.800	Coast Guard search and rescue
283.500	Air Force Thunderbirds air-to-air channel
292.100	Air Force Tactical Air Command
295.700	Air Force Thunderbirds air-to-air channel
300.600	Favorite US Navy Fighter air-to-air channel
304.800	Hurricane Hunter channel
305.400	Air Force direction-finding channel
311.000	SAC Command Post primary
314.600	Military contractors
319.400	Air Force Military Airlift Command (MAC)
321.000	SAC Command Post secondary
322.600	Air Force Thunderbirds air-to-air channel
329.000-335.000	Glide slope navigation beacons
340.200	US Navy Control Towers
342.500	Air Force Metro: weather channel
344.600	Metro: weather channel -- several agencies
345.400	Military contractors
348.600	Military aircraft to FAA Control Towers
349.400	Air Force Control Towers
360.200	US Navy Control Towers
364.200	NORAD/TAC Air primary channel
372.200	Air Force pilot-to-dispatcher channel
375.200	Air Force Metro: weather channel
375.700	Air Force Strategic Air Command channel
378.900	Air Force Tactical Air Command channel
381.300	Air Force Tactical Air Command Post "Golden"
381.700	Coast Guard air-to-ground/air-to-air channel
381.800	Coast Guard Air primary channel
382.600	Military contractors
382.900	Air Force Thunderbirds air-to-air channel
383.900	Coast Guard air-to-ground/air-to-air channel
385.250	US Navy air-to-air channel
387.900	Air Force Tactical Command channel

In the old days, monitoring the federal frequency bands was difficult. First, you had to have an old, surplus government receiver since the scanners of the day did not cover these bands. Second -- and perhaps worst of all -- these old government rigs used analog tuning. That meant that tuning accuracy was nonexistent.

And with these old surplus rigs, scanning for new frequencies was not an option. The only way to spot a new or active frequency within this slice of 175 MHz was to slowly tune the receiver until a signal was encountered.

For many years, military aircraft buffs asked the question, "When will we get a scanner to let us listen between 225 and 400 MHz?" Manufacturers didn't turn their heads away for long. Yet even with all the new scanners on the market, this band still remains relatively unexplored.

We here at *Monitoring Times* would like to find out what you are hearing on these frequencies. Your lists of military aircraft frequencies are always welcome. To help a newcomer get acquainted with the band, we've put together Table I. It's an exciting and intriguing segment of the spectrum.

"Alpha Bravo" Discussed

Monitoring Times reader Daniel L. Burn of Alexandria, Virginia, has been monitoring the "Alpha Bravo" Orderwire system in the military aircraft band.

Dan says that for the last few months he has been listening to wideband FM activity on 322.750 MHz with a PRO-2004. He says when a tone is present, that is the signal to monitor for voice activity within the wideband channel.

Stations he hears appear to be using tactical calls such as : Ball Park, Team Work, Overhead, No Trump, Deep Cut, Iron Weed, etc. Other more recognizable call signs include: Air Force One, SAM 26000, SAM 974 and 972.

The 322.750 frequency has been heard referred to as "Orderwire" and "AVMED" or "AD MEN" (can't pinpoint the exact name). Examples of "Orderwire" transmissions Dan has monitored include:

Chopstick, I have a flight for you. Air Force One coming up on your station on the 12th at 1540Z enroute to Yellowstone, need RF4 and 5 Delta. Also need stations Residual, Race Track, and Time Lady.

"Crypto is involved," Dan said, "because they make reference to KY-3s," which are a

crypto device.

Dan says that he has also heard activity on 305.550 and 366.000 MHz wideband FM. Sunspot was called by a station and asked to try RF1. On 366.000, Postulate was called by Sam 974 on "Orderwire." He also heard references to 5-India, 5-Hotel, Combat Cinders, RF2 and RF5.

To monitor this activity, Dan bought an FRG-9600 receiver and finds that calls in progress are usually + or - 50 kHz from the Orderwire center frequency. Modes he has heard include: LSB/USB/Narrowband AM.

Now the treat. Dan provides you, our readers, with a complete list of these Orderwire frequencies and designators. See Table II.

Again, frequencies are in MHz, mode is wideband FM with phone patches taking place using sideband modes +/- 50 kHz of center frequency.

Now, what is all this that Dan is hearing? This Air Force system is called "Combat Cinders"/"Autovon"/"Wideband." This is a full-duplex FDM multichannel wideband FM communication system. Antennas for the system are located at nuclear hardened sites at many of the nation's autovon switching centers. This network also can be heard from various relay aircraft and emergency command post aircraft.

The system has provisions for secure voice and teletype (also FAX) as well as fully automatic autovon (the government's telephone system) voice trunks with standard autovon signaling and control.

Trunks are located on 12, 16, 20, and 24 kHz SSB channels. Zero-4 kHz is used for Orderwire-to-ground stations. All the frequencies for the system are in the 225-400 MHz band. Effective radiated powers

TABLE II
Orderwire Frequencies

Ch	Ground Freq	Aircraft Freq
RF1	326.000	382.350
RF2	246.950	305.550
RF3	345.500	336.800
RF4	322.750	366.000
RF5	390.000	397.050
RF6	382.350	326.000 Referred to as RF1 reverse
RF7	305.550	246.950 Referred to as RF2 reverse
RF8	336.800	345.500 Referred to as RF3 reverse
RF9	366.000	322.750 Referred to as RF4 reverse
RF10	397.050	390.000 Referred to as RF5 reverse

**TABLE III
European Bases**

POLICE

Ramstein Law Enforcement (code name Lancer)	72.325, 72.375, 72.425
Ramstein Security (flightline, etc.)	Rotated randomly
USAFE Security Police (guards, HQs, VIPs, etc)	72.100
E HOF Security Police	F1 70.475, F2 72.175
Metro Police (town patrols and other posts)	39.700
Base Defense (used during and the real thing)	53.000, 52.400, 52.125
Office of Special Investigations	138.075
Sembach Air Base Security Police	73.675

FIRE DEPARTMENTS

Ramstein AFB	73.875
Vogelweh/Landstuhl/K-town	73.900

CIVIL ENGINEERS

Ramstein (also used as exercise/realthing net)	73.800
Vogelweh/Landstuhl/K-town	73.350

MEDICAL

Ramstein Clinic	73.750
Landstuhl Army Hospital (2nd General)	143.850

COMMANDERS NET/COMMAND POSTS

316 Air Division/377 Combat Support Wing/ 86 Tactical Fighter Wing	72.025
USAFE Command Post (US Air Forces Europe)	70.125
Base Operations	72.275
Military Airlift Command (terminal and fleet service)	72.600
Transportation/Base Taxi/ Motor Pool	70.675

MAINTENANCE

512th AMU	37.360
GOLF	73.525
Ground control	375.000

associated with this system are very high. One published description of the system said it was one kilowatt to counter absorption effects near nuclear fireballs.

This system is used primarily by Air Force One, Air Force Command aircraft from SAC, and the National Command Authority.

Many thanks to Dan Burns for all the great information (and tape!) that was forwarded to me. I hope to hear more from you in the future.

A List from Germany

A list of interesting military base frequencies was forwarded from G.F. Keith, KA5QFI, at Ramstein AFB, West Germany. Many thanks to Mr. Keith for this look abroad, which we share with you in Table III.

Back In the States Texas, To Be Exact

I recently received a very nice list from a fed monitor in Texas. He wishes to remain anonymous, but wanted to share the following FBI information with our *Monitoring Times*

readers.

Dallas-Ft. Worth Metroplex

163.9125, 167.5125	F1	KFP950 Dallas
163.975, 167.7625		KFP951 Ft. Worth
167.3875	F2	
167.250	F3	
167.5625	F4	
167.2125	F5	
419.250		Control link for F1 repeater

Houston

163.9625	F1	Repeater output
167.450	F3	
167.5625	F4	

Soup up with our Super Amplifier!!

Introducing a brand new product, the

Super Amplifier™ is a compact pre-amp designed to work with scanners and it amplifies the reception of the VHF/UHF bands (from 100MHz to 1GHz) as high as 20db.

The **Super Amplifier™** has an adjustable gain which is controlled from the back of the unit and allows amplification level of up to 20db through all frequencies, equipped with a bypass switch to return to normal scanning frequencies. As with all other GRE products, you will find the quality and design of the **Super Amplifier™** to be of the highest standard.



Specifications and Features

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- Bypass Switch

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Fax: (415) 591-2001

San Antonio

163.9875, 167.325	F1	KEX840
167.3875	F2	
167.4125	F3	
167.5625	F4	
167.2125	F5	
412.425, 412.575		Control links

I would like to again thank all our contributors this month for sharing their fed lists with us and invite the rest of our readers to send your material to the column address featured in the masthead. Time to crank up the scanner and check out some new frequencies in the Federal File. Till next month...



West to Washington

First, I hope that everyone spent a happy holiday season, and that Santa Claus was good to each of you. This month the state of Washington is our subject. Without prolonging the agony any further, let's have a look at what Bellingham has to offer the listener.

2.1825	KIL 880	SGC Inc.
4.1250	KEB 282	Sea West Fisheries
4.1250	KEB 538	William Gilbert Jr.
4.1250	KZN 507	Whatcom Marine Electronics
4.1250	WHF 837	Schenk Seafoods
4.1250	WHG 980	Diane Nelson
4.1250	WQB 534	William C. Williams
4.1250	WRD 600	Nelson Brothers Fishing
4.1436	KEB 282	Sea West Fisheries
4.1436	WHF 837	Schenk Seafoods
4.1436	WQB 534	William C. Williams
4.4198	KEB 282	Sea West Fisheries
6.2186	KEB 282	Sea West Fisheries
6.2186	KEB 538	William Gilbert Jr.
6.2186	KZN 507	Whatcom Marine Electronics
6.2186	WHF 837	Schenk Seafoods
6.2186	WHG 980	Diane Nelson
6.2186	WQB 534	William C. Williams
6.2186	WRD 600	Nelson Brothers Fishing
6.2216	KEB 282	Sea West Fisheries
6.2216	WHF 837	Schenk Seafoods
6.2216	WQB 534	William C. Williams
6.5219	KEB 282	Sea West Fisheries
8.2911	KEB 282	Sea West Fisheries
8.2911	KEB 538	William Gilbert Jr.
8.2911	KZN 507	Whatcom Marine Electronics
8.2911	WHF 837	Schenk Seafoods
8.2911	WHG 980	Diane Nelson
8.2911	WQB 534	William C. Williams
8.2911	WRD 600	Nelson Brothers Fishing
8.2912	KEB 282	Sea West Fisheries
8.2912	WHF 837	Schenk Seafoods
8.2912	WQB 534	William C. Williams
12.4291	KEB 282	Sea West Fisheries
12.4291	WHF 837	Schenk Seafoods
12.4291	WHG 980	Diane Nelson
12.4291	WQB 534	William C. Williams
12.4291	WRD 600	Nelson Brothers Fishing
12.4323	KEB 282	Sea West Fisheries
12.4323	KEB 538	William Gilbert Jr.
12.4323	KZN 507	Whatcom Marine Electronics

12.4323	WHF 837	Schenk Seafoods
12.4323	WQB 534	William C. Williams
12.4354	KEB 282	Sea West Fisheries
16.5871	WHF 837	Schenk Seafoods
16.5871	WRD 600	Nelson Brothers Fishing
16.5902	WHF 837	Schenk Seafoods
16.5933	KEB 538	William Gilbert Jr.
16.5933	KZN 507	Whatcom Marine Electronics

The following list gives an idea of the companies which are using the radio in Seattle.

2.0965	KFN 719	John C. Rottler
2.0965	KGO	Northwest Instruments
2.0965	KJA 580	G & L Marine Radio
2.0965	KKP	Foss Launch & Tug
2.0965	KMC 981	Maritime Supply Co.
2.0965	KTR 903	Honeywell Communications
2.0965	KYL 807	Lunde Marine Electronics
2.0965	KZL 294	Aubrey E. d'Cafango
2.0965	WHF 888	Raytheon Service Company
2.0965	WHG 642	Sea-Mar Electronics
2.0965	WOV	Sound Marine Electronics
2.0965	WQB 533	Marine Electronics
2.1820	KFN 719	John C. Rottler
2.1820	KGO	Northwest Instruments
2.1820	KJA 580	G & L Marine Radio
2.1820	KKP	Foss Launch & Tug
2.1820	KMC 981	Maritime Supply Co.
2.1820	KTR 903	Honeywell Communications
2.1820	KYL 807	Lunde Marine Electronics
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2.1820	WHF 888	Raytheon Service Company
2.1820	WHG 642	Sea-Mar Electronics
2.1820	WOV	Sound Marine Electronics
2.1820	WQB 533	Marine Electronics
4.1236	KIZ 741	Arnold Rasmussen
4.1250	KBK 372	Northwest Fisheries
4.1250	KBK 378	Harris Electric
4.1250	KBK 473	Rondys Corp.

4.1250	KCE 229	Judi B Inc.
4.1250	KCE 324	Clipperton Inc.
4.1250	KCY 50	Vernon W. Lumbert
4.1250	KEB 491	Ole Hendricks
4.1250	KFN 719	John C. Rottler
4.1250	KGA 259	Reidar Tymes
4.1250	KGO	Northwest Instruments
4.1250	KII	Richard J. Myhre
4.1250	KIL 763	Master Yacht Marine
4.1250	KIU	Marine Power and Equipment
4.1250	KIZ 253	Scott L. Bowlden
4.1250	KIZ 741	Arnold Rasmussen
4.1250	KJA 580	G & L Marine Radio
4.1250	KJB 299	Thomas G. Hanson
4.1250	KKF	Mark I Inc.
4.1250	KKJ	William A. White Enterprises
4.1250	KLM	Sea Alaska Products
4.1250	KMC 249	Peter Njordvik Seattle
4.1250	KMC 943	Kristofer Knutson
4.1250	KMC 955	Mokuhana Fisheries
4.1250	KMC 981	Maritime Supply
4.1250	KME	Ildhuso Fisheries
4.1250	KMN	Whitney Fidalgo Communications
4.1250	KPB 594	Earnest Mathison
4.1250	KPB 602	Kristian E. Poulsen
4.1250	KPB 680	Main Fish Company
4.1250	KRF	Soren A. Sorenson
4.1250	KST	Sea Land Service
4.1250	KTR 873	KK Fisheries Inc.
4.1250	KTR 903	Honeywell Communications
4.1250	KUZ 388	CWC Fisheries Inc.
4.1250	KUZ 505	Westpoint Fisheries
4.1250	KWS 628	Joseph R. Fribrock
4.1250	KXE 247	U.S. Dominator Inc.
4.1250	KXJ 694	Karl J. Hansen Enterprises
4.1250	KXZ	Knappton Maritime
4.1250	KYI 593	Bellingham Cold Storage
4.1250	KYL 807	Lunde Marine Electronics
4.1250	KYQ 852	Western Pioneer
4.1250	KYQ 856	H & N Shrimpers
4.1250	KZA 959	Leland T. Shelford
4.1250	KZC 558	W H Autopilots Inc.

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4.1250 KZJ 379 Northern Marine Electronics
4.1250 KZJ 651 Sebastian Stewart Fishing
4.1250 KZK 517 Hemlock Inc.
4.1250 KZK 877 Harold Clausen
4.1250 KZL 294 Aubrey E. d'Cafango
4.1250 KZL 391 Bristol Fisheries Inc.
4.1250 KZL 659 Washington Fish & Oyster
4.1250 KZL 877 Perry A. Buholm
4.1250 KZN 578 Deep Sea Inc.
4.1250 KZP 609 Donald P. Newman
4.1250 KZU 969 Puget Sound Freight
4.1250 KZV 687 Jack G. Johnson
4.1250 KZV 714 Peter Strong
4.1250 KZV 816 Alaska Shipping Company
4.1250 WDI Royal Viking Fisheries
4.1250 WDT 530 Bomar D. Peterson
4.1250 WDT 534 Whatcom Marine Electronics
4.1250 WFA 739 Baker Marine Management
4.1250 WHD 620 Sea Elf Fisheries
4.1250 WHD 826 Manuel da Cruz
4.1250 WHD 834 Polar Star Fisheries
4.1250 WHF 888 Raytheon Service

		Company
4.1250	WHG 586	Kenco Ocean Towing
4.1250	WHG 642	Sea Mar Electronics
4.1250	WHG 805	Alan M. Pelton
4.1250	WHG 883	Donna L. Tegoal
4.1250	WHH 227	Watson Enterprises
4.1250	WHH 250	Sunmar Shipping
4.1250	WHH 272	Peggy Ann Anderson
4.1250	WHH 393	Pierre Rajotte Inc.
4.1250	WHU 415	Western Geophysical
4.1250	WOA	Alaska Shell
4.1250	WOV	Sound Marine Electronics
4.1250	WQA 221	Pser Inc.
4.1250	WQA 253	Puget Sound Instruments
4.1250	WQA 279	Dressel Pacific Company
4.1250	WQA 840	Gail A. Tate
4.1250	WQA 841	Dennis Petersen
4.1250	WQB 317	Mason J. Williams
4.1250	WQB 332	Pete Haugen
4.1250	WQB 335	Jacqueline Helgevold
4.1250	WQB 449	Isafjord Co.
4.1250	WQB 623	Kaldestao Fisheries
4.1250	KQB 802	Stephen D. Nehen
4.1250	WQB 859	Aus Fisheries Inc.
4.1250	WQX 692	Andrew J. Moritz
4.1250	WQZ 253	Nancy L. Andrich
4.1250	WQZ 258	Deep Sea Fisheries
4.1250	WQZ 312	Sea Run Seafoods
4.1250	WQZ 456	Blue Ocean Fishing
4.1250	WQZ 490	Donald J. Trimberger
4.1250	WRD 611	Frank D. Huff Co.
4.1250	WRD 613	Vessell Management
4.1250	WRD 631	Myhre Enterprises

4.1250	WRD 746	Rudy A. Peterson
4.1250	WRD 747	Donald P. Newman
4.1250	WRD 756	John O. Crowley
4.1250	WRS 936	Pacific Fleet Inc.
4.1250	WRS 962	Seven Seas Fishing
4.1250	WRS 976	Silverado Corporation
4.1250	WWS	Norseman Fisheries
4.1250	WXY 903	Westness Inc.
4.1250	WXY 952	Palmer Pedersen
4.1250	WXY 959	Speedwell Inc.
4.1250	WXZ 203	Larry Hendricks
4.1250	WXZ 245	Einar Langesater
4.1250	WXZ 362	Icicle Seafoods Inc.
4.1250	WXZ 477	Daniel E. Webster & Co.

Other frequencies on which stations in Seattle can be heard include: 4.1422, 4.1436, 4.1822, 4.4194, 6.2172, 6.2186, 6.2216, 8.2907, 8.2906, 8.2911, 8.2938, 8.2942, 12.4987, 12.4309, 12.4323, 12.4354, 16.5859, 16.5871, 16.5902, 16.5933, 22.1226, 22.1240, 22.1257, 22.1271, 22.1300, 22.1333, 22.1364. All frequencies are in megahertz.

Those of you interested in monitoring cruise ships will have more to look forward to. Holland America has recently announced that they are negotiating for the construction of three new cruise ships which will probably be delivered in 1993, 1994, and 1995 with the total value of the order being in the range of 600 to 700 million dollars.

Good listening until next time!!

mt

Confined Space Hamming - Part 2

Last month we showed you some solutions to the "where to put the rig" problems many of us have when we live in an apartment or small home. Now let's take a look at some antennas that will allow us to get on the air!

All of the antenna ideas presented here (with one exception) have been used at some time or the other at one of my station locations with decent results.

Some Things to Keep in Mind

Never attempt to erect an antenna where there is the danger of it coming into contact with a high voltage line. If this is impossible to do, consider one of the alternatives offered here.

A good ground is vital to success! If you cannot run a ground directly to the earth or make a solid cold water pipe connection I suggest using a single radial (a single wire one quarter wavelength long — use the formula $F_{MHz}/234$ to find correct length) for the lowest frequency you want to work. An alternative idea is to use the MFJ Artificial ground model MFJ-931. This device (available from MFJ Box 494, Miss. State, MS) will repay its \$79.95 price many times over in good solid contacts from not so great antennas.

Unless you are running high power do not be too concerned with wire size. Twenty-two gauge wire will easily handle the average 100 watt amateur transceiver, and enamel wire is very difficult to see if the antenna must be disguised. As is always the case, try to use the heaviest possible gauge.

If you must use 30 gauge to avoid detection by the landlord/neighbors, then use it. Remember though, soft drawn wire (such as hook-up or magnet wire) cannot be used for free spans as it will stretch and easily break. Use hard drawn wire or copper covered steel if the antenna is going to be run as a free span device between two high

points.

Purchase or build a good antenna matcher; there are many on the market. Pick a reliable design and learn to use it. Such a device will give you much greater flexibility when experimenting with antennas. Considering today's no tune transmitters, I can't understand why there is not an antenna matcher (or match box, or antenna tuner) in every ham shack. While the automatic tuners many manufacturers offer provide a degree of usefulness they simply cannot come close to a manual tuner for flexibility.

Vertical antennas work well if elevated or have an adequate ground system, horizontal antennas are less susceptible to noise than vertical antennas, and loop antennas are even quieter.

If you are erecting an antenna that will require climbing, throwing or stringing wires or ropes outside or inside, make it a rule to never work by yourself. Always have a helper along to provide a degree of safety and make the job easier.

Experiment

Don't be afraid to experiment with something different. There are many amateurs who use rain gutters, balcony railings and random lengths of wire thrown on the floor or run around the corners of the living area.

Idea Number One

If you have access to the roof of your living quarters, two very successful antennas are shown in figure 1. Figure 1A is an end fed wire antenna that is run along the peak of the roof. Try to get as much wire up as possible. Feed it on the end via your antenna matcher. Made out of enamel wire and secured in place with clear aquarium sealer, this antenna is difficult to detect, and in most cases works great.

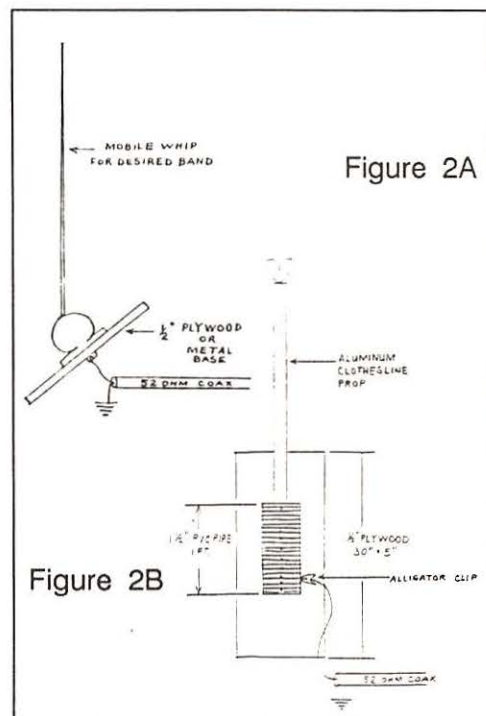
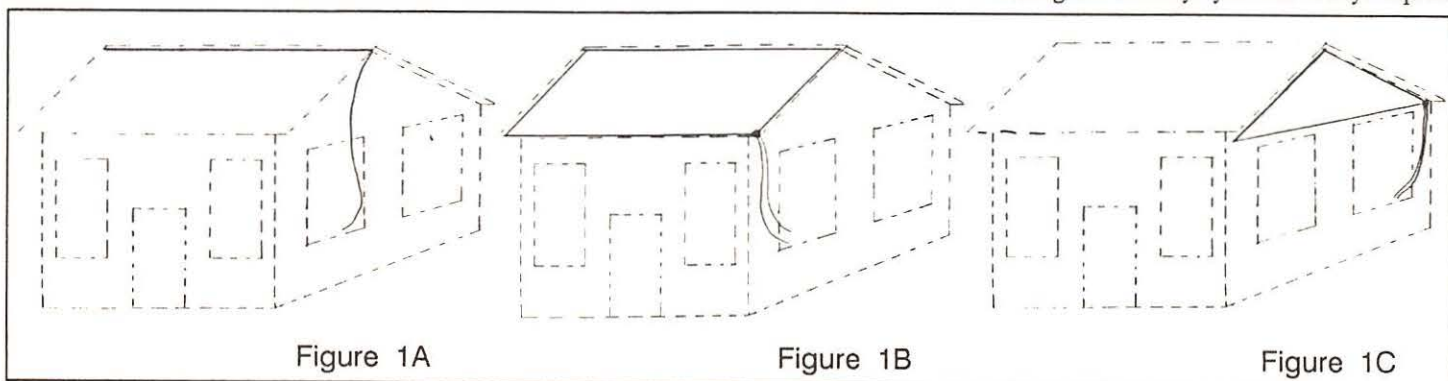


Figure 1B is a variation on the same theme. Again, use aquarium sealer to secure the wire and the roof of the dwelling as a support. Form a continuous loop and feed it at one end with 300 ohm TV line and to the rig via your antenna matcher as shown in the diagram. The loop antenna has two advantages over the single wire. First of all, it will provide a measure of gain on some bands, and the loop reduces man-made noise to a considerable extent.

If it is impossible to follow the outline of the roof as shown in 1B, you might wish to try the loop shown in 1C. This antenna is strung along the peak of the house as a delta loop. A neat way of disguising this antenna is to use wire that appears to be Christmas light wire; naturally if you install decorations during the holidays you can always explain



that you intend to leave the wires up permanently!

In both 1B and 1C, make the loop as large as possible and feed with 300 ohm ribbon line via a transmatch. You can break the loop and feed it at any point. The objective is to get on the air -- let's not worry about polarization and efficiency at this point.

Idea Number Two

Everyone knows mobile antennas work fairly well. If you happen to have such an antenna, mount it as shown in figure 2A, feed it with 50 ohm coax via a transmatch, install a good ground or use the MFJ-931 and go to town.

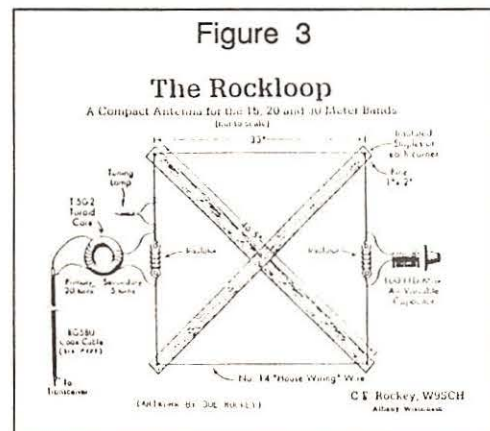
Figure 2B uses a single 7-foot-long clothes pole and is connected in series with a coil to provide matching. The coil is constructed on a piece of one and one half inch PVC. Use 18 gauge enamel wire to wrap 60 turns close wound around the outside of the PVC (you will need a hunk of PVC about one foot long). Every third turn twist the wire about 5 or 6 turns to make a tap; use sand paper to clean the enamel off of each tap.

Connect a piece of 18 gauge wire 15 inches long to the end of the coil and attach an alligator clip to the free end. Use coax to feed the antenna via the transmatch.

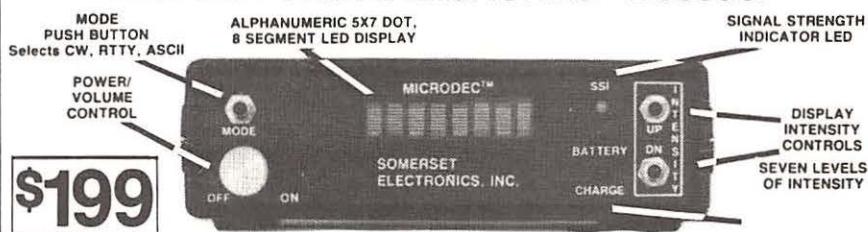
To use this antenna, connect a 50 ohm dummy load to the transmatch and tune the rig to the center of the band you desire; now connect the antenna, use reduced power at the rig (just enough power to get SWR reading) and adjust the tap for the best match. Using the transmatch you should be able to work over the entire band of interest.

A Third Solution

A third interesting idea is the one presented in figure 3. This antenna designed, by C.F. Rockey, W9SCH, was presented in the Autumn 1989 issue of *SPRAT* (The newsletter of the G-QRP club) who have given their permission to reproduce



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this article in *Monitoring Times*.

As you can see, the antenna is extremely compact, being only 33 inches on a side. And it's very easy to construct. The antenna requires about 15 to 20 pF to tune 15 meters, 30pF on 20, and about 60 pF on 30 meters. (No doubt the antenna would function on 18, 12 and 10 meters with a bit of experimenting.)

The designer says that fooling with the dimensions and turns on the toroid might improve operations, but the stated dimensions seem to be adequate. (If you try this antenna be sure to drop me a note and tell me how it works for you.)

Ok, now you have the idea, give it a go. I would appreciate hearing from anyone who comes up with something different in the way of confined space antennas that works.

FCC Writes Letters

As many of you know, there is an ongoing dispute about third party traffic on the 20 meter phone band. Much on-air discussion (arguing) has been going on. The ruckus has caught the attention of the FCC (not a cool condition), and the result has been a letter being circulated by the Commission to various amateurs and organizations requesting their input on the problem.

The letter states that 15 to 20 percent of the 20 meter phone band is being claimed by various amateurs and groups specifically for the purpose of handling third party traffic. According to the Commission there does not appear to be justification for this much third party traffic and they want to know why it should continue. Their feeling (and the feeling of many other amateurs) is that such traffic can be carried on by commercial services and should not be transmitted on

the ham bands.

Requests for voluntary solutions have been solicited; however, the Commission does not rule out the possibility of a rule-making by them to limit the practice.

Hopefully something will be done to eliminate the problem soon. Strong stations have been carrying on phone patches daily and excluding other amateurs from using frequencies that should be open to everyone. Give a listen to some of these patches and you will understand the concern many of us feel. Some conversations are downright commercial in nature and others are plain useless.

220 MHz Allocations

Acting on behalf of the National Communications System, the Department of Justice has filed a petition in the US Court of Appeals for the DC Circuit, requesting that the court review the FCC action in Docket 87-14. Docket 87-14 denied reconsideration of the 220 MHz allocations decision.

The petition seeks review on the grounds that FCC action was arbitrary, capricious, and an abuse of discretion, and requests that the action be set aside and the matter remanded to the FCC. The case, United States of America vs Federal Communications Commission has been assigned case number 89-1635 by the Clerk of the Court. A similar petition for review filed earlier by ARRL was designated number 89-1602 (via ARRL)

That's it for January 1990, gang. Here's wishing each and every one of you a happy and prosperous New Year. With luck, this will be the year the amateur service sees a no-code license. 73, Ike, N3IK

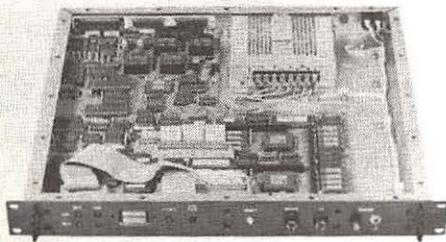
mt

The Plot Thickens

I thought I solved a mystery last October when I uncovered a new 16 tone modem on 13.912 MHz which was being tested at Andrews AFB, Maryland. (I made a mistake and said it was in Florida.) Since then, another new data mode popped up on HF.

On 14.856 kHz, for the last several months, the state department was testing a new modem at the Remington, Virginia, site, that uses 40 tones. As I mentioned before, these new data systems are getting so complex it will take several years for the technology to reach the shortwave listener or ham market.

Like the 16 tone modem, the 40 tone system uses 39 QDPSK (Quadrature Differentially Phase Shift Keying). The 40th tone is unmodulated and is used as a tuning signal. Please don't be intimidated. I'm not trying to scare you with these "high tech" words. I just want to keep you informed.



New data systems like this 40 tone modem are so complex it'll be years before the technology filters down to the amateur market.

An innovation, which appears to be a trend in parallel tone technology, is the implementation of a special microprocessor which is used to perform a mathematical coding system called "Convolution" or "Reed Solomon." These coding schemes will scramble the data which makes it appear to be crypto covered. But it may be possible, according to the pros, to copy these signals in the clear. The testing that was done at Remington may have been unencrypted.

The previously mentioned codings are used only for the purpose of correcting data. On board the 40 tone radio modem is a special microprocessor which recognizes the coding and makes special adjustments in the data bits. This eliminates the repetition which is used, for example, in other forms of data communications such as SITOR, FEC, or Packet Radio.

Overhead RTTY

I received several letters from readers about receiving RTTY signals from the satellites. I don't have an earth station but my own brother, who is in the home satellite business, tries to sell me one during family "get-togethers." When I asked him about hidden

signals on the TV satellites, he claims he doesn't know too much but some of his fellow entrepreneurs are experts.

I met a person who sells TV satellites at the Radio Expo Hamfest which is held in September in the Chicago area (he informed me that he knows my brother). He was set up in the flea market with a small five foot dish on a patio mount (you have to point the dish by hand) and a Uniden 6000 satellite receiver which was feeding a portable color TV. The setup cost about \$450.00 less the TV.

I asked him about hidden signals and he immediately pulled out a book from a cardboard box. I recognized the book as the *Hidden Signals on Satellite TV* by Thomas P. Harrington and Bob Cooper, Jr. He looked up the appropriate satellite and aimed the dish in a split second. I believe he pointed the dish to the Westar satellite. I told him "just a minute" and I ran to my truck (which was a few hundred feet away) to get my R-7000 receiver.

He connected the R-7000 to a connector on the rear apron of the Uniden 6000 marked "70 MHz out." RTTY signals can be found by tapping off the video out-jack on some satellite receivers. I tuned the R-7000 receiver from 50 to 70 MHz and found a cluster of signals from wide band FM broadcast to time signals. I didn't find any RTTY but that was just one transponder and the antenna was set to vertical polarization. He could have selected other transponder channels and a horizontal position to get even more hidden signals. I was impressed anyway.

I think a small setup like this is very affordable. You can set the dish in the back yard and anchor it with sand bags, but you would need a way to adjust it. That would require a way to see a TV picture while you are pointing the dish. You could probably set the TV in the back window and point the dish to the "bird" for best reception. Then run inside and open a new world of satellite listening.

Other Satellites

There's a whole new world to explore in the 230 to 300 MHz range. Lately I've been hanging out there myself. Using an R-7000 and a very good antenna system, you can copy strange FSK signals. They use, in some cases, 2.5 kHz shift. It is believed that these signals are coming from the NAVSTAT satellites from the Atlantic and the Pacific areas. In the midwest you can catch these birds by simply pointing your antenna east or west. No one, as far as I know, has been able to get a printout, but I'm sure some one is working on it.

Here is a list of UHF satellites that are copyable in the midwest.

FREQ	NAME	USE	COMMENTS
135.575	ATIS	UNK	Search and Rescue operations
137.300	USSR	UNK	Weather Fax
137.400	USSR	UNK	Weather Fax
137.630	NOA	UNK	Weather Fax
137.850	USSR	UNK	Weather Fax
244.080	FLTSTAT	AF1	Uplink USB
244.140	AFSTCOMUNK		Data 2.5 k FSK
244.180	FLTSTAT	AF1	Downlink USB
244.210	AFSTCOMUNK		Data 2.5 k FSK
250.450	FLTSTAT	UNK	DATA
250.550	FLTSTAT	UNK	Interleaved TDM RTTY
250.650	FLTSTAT	UNK	Interleaved TDM RTTY
251.950	?	UNK	Voice data
252.018	?	UNK	Spread spectrum?
252.040	?	UNK	Spread spectrum?
252.060	?	UNK	FSK 1200BD
252.084	?	UNK	Spread spectrum?
252.106	?	UNK	Spread spectrum?
252.118	?	UNK	Spread spectrum?
252.138	?	UNK	FSK 1200BD
252.160	?	UNK	Strong, FSK DATA
252.183	?	UNK	Spread spectrum?
252.205	?	UNK	Spread spectrum?
253.263	?	UNK	East, vstrong, carrier
253.662	?	UNK	West, weak, voice data?
253.750	?	UNK	Strong, west, sweeping carrier
253.850	?	UNK	Weak, spread spectrum?
254.150	?	UNK	Strong, warbling carriers
254.666	?	UNK	West, strong, carrier
255.251	?	UNK	Weak, NSK
256.952	?	UNK	West, weak, voice data?
257.049	?	UNK	West, strong, spread spectrum?
257.160	?	UNK	Weak, voice data?
258.558	?	UNK	West, moderate, spread spectrum?
258.643	?	UNK	SE, strong, voice data?
258.659	?	UNK	SE, strong, voice data?
259.263	?	UNK	SE, strong, carrier
261.700	?	UNK	SE, strong, voice data?
261.726	?	UNK	SE, strong, voice data?
261.782	?	UNK	SE, weak, voice data
261.870	?	UNK	SE, moderate, voice data?
262.400	?	FLTSTAT	West, moderate, warbling carrier
265.266	?	UNK	SE, strong, carrier
265.367	?	UNK	NE, weak, Morse?
265.462	?	UNK	SE, weak, fluttering carrier
266.050	?	UNK	SE, strong, FSK
266.950	?	UNK	SE, strong, voice data?
267.050	?	UNK	LINK11,?,
267.064	?	UNK	Fluttering carrier
268.248	?	UNK	SE, weak, pulsing carrier
268.338	?	UNK	NE, strong, pulsing carriers noise
269.750	?	UNK	NE, vstrong, warbly carrier
419.577	?	UNK	INIT?

Radio C-Span International

What if you had a radio that picked up the BBC World Service, Radio Canada, Radio Japan, Swiss Radio International, Radio Nederland, and Radio Prague with signals that never faded and were not subject to storms, solar flux, or local line noise?

Suppose this amazing radio gave you programming from these stations with a high enough fidelity that music was actually listenable, that news programs were as clear as the local FM powerhouse?

"What is this?" you ask. "More miracles from the Japanese?" No, it's just the latest move from cable's brightest star: C-SPAN, the Cable Satellite Public Affairs Network.

Last September C-SPAN's new audio formats changed forever the face of American cable systems' audio subcarrier services.

Until now, cable companies that offer FM audio subcarrier services to their customers usually offer a mixed package of local FM stations and premium cable audio programming such as the Jones Intercable channels or the now defunct but fondly remembered Studio Line services.

Now cable, via C-SPAN, makes something available to nearly 50 percent of American homes that few have ever experienced: short-wave radio.

The Game Plan

By virtue of its occupancy of two satellite transponders, C-SPAN has control of vast amounts of audio subcarrier space. For this current venture they have decided to use only the subcarrier frequencies on their Galaxy 3 channel 24 service. If all goes well and this international rebroadcast service is well received, it's difficult to imagine what amazing things they'll do with the additional subcarrier space available on G3, 14!

C-SPAN Audio 1 and 2

The channel has set up two main frequencies for this service: C-SPAN Audio 1 (5.22 MHz) and C-SPAN Audio 2 (5.40 MHz). As stated in their brochure to cable companies, "C-SPAN's flagship audio network offers daily live coverage of congressional hearings, speeches, and press conferences happening in the nation's capital."

In addition, Audio 1 offers an "audio link with the world" featuring "six hours of international programming each evening from foreign radio sources." Interspersed throughout the day are segments of C-SPAN generated music and schedule information.

BBC on the Line

C-SPAN Audio 2 is devoted exclusively to the retransmission of the BBC's World Service.

This is accomplished now through the use of American Public Radio's (APR) retransmission of the BBCWS via FM/SCPC on W4.

According to C-SPAN audio network's manager Beth Glatt, a dedicated line directly from Bush House in London should be in service soon, which will improve the audio quality even more. Imagine listening to "Meridian" on a nearly studio quality line!

Can It Get Any Better?

Amazingly, this may only be the beginning. The C-SPAN audio network's fact sheet states: "Future audio programming will provide historical perspective through programming of public events from the past, drawn from the National Archives and other sources." In addition, negotiations to establish other dedicated 24 hour services such as Radio Moscow may also be undertaken.

C-SPAN: Dish Owner Friendly

These services are automatically available to satellite TV system owners; to receive them one merely has to tune them in on the satellite receiver. The channel's policy has always been and will continue to be that it will not scramble its video or audio.

It's Up to Your Cable Company

But what about the many *Monitoring Times* subscribers who have cable? How can they get these services? If your cable system offers a subcarrier service and you already subscribe, tune around; you may have been overlooking these services.

If you can't find them, call your cable company and ask if they're available. If not, encourage them to do so. Get your friends to request it too. This really works! Zack Schindler, N8FNR, wrote in this column in October 1989 that he wanted to do just that. I told him to forget it but Zack would not be deterred.

Two months ago he wrote me again: "...I have convinced my cable company to pick up both C-SPAN audio feeds and NASA Select. We will start getting these in about three weeks and they are going to publish a NASA Select schedule in our monthly cable guide!"

Well, how about it? Is Zack just a lucky guy or are most cable companies that responsive to their patrons?

The Other Side of the Coin

I'm about ten miles from the nearest cable drop so I've no choice in the dish or cable debate. However, I called the local cable company to see how amenable they would be to carrying these services. Here, for \$15.95/month one can get 17 channels but not

C-SPAN I or II or any of their audio.

"How about NASA Select?" I asked. "What? Never heard of it." After explaining what it was, the person I talked to replied, "B-o-r-i-n-g."

A quick call to the nearby Charlottesville cable system revealed a much more cosmopolitan attitude. They carried C-SPAN! C-SPAN II? No. Audio 1? No. Audio 2? No. NASA Select? Huh?

These additional audio services show an imaginative direction that is a clear departure from what we've come to expect from new cable initiatives. There's little to commend in the overall trend in cable toward more impulse Pay Per View and endless shopping channels. Yet here is C-SPAN quietly and admirably fulfilling a tiny portion of cable's once great promise.

Cheers to C-SPAN, the cable companies that carry the new services, and the customers who take the trouble to see that they get what they deserve. Let me know what your cable company plans to do with these new services. Write to me at the masthead address.

More on NASA Select

I talked with Les Gaver, executive producer for NASA Select, who told me that approximately 300 cable systems carry the channel during space missions. He also reiterated NASA's position in favor of continued access by dish owners and any cable system which wanted to retransmit the channel. It is a public service which they are proud to provide.

Mr. Gaver said that some Ku band was used but it was "nonstandard" video (encrypted via NASA's own digital video encryption software) and that the only transmissions to be found on TDRS (Tracking and Data Relay Satellite) were digital telemetry data from the shuttle to the various centers around the country.

NASA SCPC

Throughout any mission the air-to-ground audio is carried on NASA Select. However, when a change of shift briefing is aired, mission audio will not be heard. This doesn't mean there isn't air-to-ground audio; it just means they can't carry both at the same time.

NASA maintains a separate Mission Audio on SCPC via transponder 9 of F2R, which carries Mission Audio even during change of shift briefings. The best way to monitor the shuttle missions is to have your SCPC receiver tuned to mission audio while your satellite receiver is tuned to NASA Select. You won't miss a thing!

This unique manual covers the complete shortwave range from 3 to 30 MHz, plus the adjacent frequency bands from 0 to 150 kHz and from 1.6 to 3 MHz. It is the only publication in the world with up-to-date frequencies for the current sunspot maximum - published now and not five years too late! Latest technical developments such as the multitude of new ARQ and FEC teleprinter systems are covered exclusively by our UTILITY GUIDE. Sophisticated operating methods and regular overseas monitoring missions (1989 for months in Dominica, Indonesia, Malaysia, Singapore and Somalia) complete our bestseller.

The completely revised new edition includes a frequency list with 17740 frequencies, and a call sign list with 3285 call signs. Up-to-date schedules of FAX meteo stations and RTTY press services are listed both alphabetically and chronologically. Abbreviations, addresses, codes, definitions, explanations, frequency band plans, international regulations, modulation types, NAVTEX schedules, Q and Z codes, station classes, telex codes, etc. - this reference book lists everything. Consequently, it is the ideal addition to the World Radio TV Handbook for the "special" stations on SW!

Further publications available are the Guide to Facsimile Stations (9th edition) as well as the Radioteletype Code Manual and the Air and Meteo Code Manual (10th editions). We have published our international radio books not only since yesterday but for 20 years. They are in daily use at equipment manufacturers, monitoring services, radio amateurs, shortwave listeners and telecommunication administrations all over the world. Please ask for our free catalogue, including recommendations from all over the world. All manuals are published in the handy 17 x 24 cm format, and of course written in English.

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Mailbag:

✓ "Is there any conventional way to receive Soviet and British TV?" David Sheley, Blytheville, AR

The key here, David, is "conventional." At present it is not possible for the average home dish owner in the continental U.S. to watch either. Let's take the British situation first.

Up to this past summer, daily feeds of the BBC "Six O'Clock News" were readily available on W5.15. Since then, these feeds were switched from the NTSC (U.S. standard transmission) mode to the PAL (primarily European) mode.

These feeds appear to us as black and white with the screen rolling out of control while the audio is clear. It is still possible to watch this feed if you have a set capable of displaying the PAL format. The only such set I've heard about was one sold by Shaun Kenny on his "Green Sheet" program and that was a few years ago.

NHK used to have British and European news feeds daily in the NTSC format on its G2.11 channel. I have not seen these of late. Finally, there are British NTSC feeds on the Intelsat birds which anyone west of the east coast will have difficulty receiving.

As for Soviet TV, it is even less promising. Locations in Maine, Alaska, or possibly Hawaii have the best chance, using big dishes, of getting any Soviet TV via their domestic geosynchronous birds. The best chance for

those of us outside those areas is to try the Molniya satellites, which because of their elliptical nongeosynchronous orbits fly directly over North America. The problem is that these birds are on the move and coverage to U.S. locations is only for six hours at a time.

To successfully view the Molniya transmissions you will be required to shift your dish to an entirely different location in the sky from the Clarke Belt on which it is now trained. Be aware, though, that these transmissions also are not compatible with NTSC standards and will provide even more difficulties. In addition, downlink tuning standards are different and may require an analog TVRO receiver to tune the video carrier.

✓ "I would appreciate your advice on the subject of splitters and DC blocks as they apply to satellite reception . . . I am eager to get started but I don't want to 'smoke' my equipment." Thomas Barrett, Ozark, AL

Good idea, Thomas. Beside, the Surgeon General has determined that smoking your gear could be hazardous to your wallet! The Low Noise Block downconverter (LNB) is powered with DC voltage from the satellite receiver in your house. This voltage travels up to the LNB via the 75 Ohm coax on which the 950-1450 MHz TV signals travel down.

In a normal TVRO installation, this signal goes untouched into the receiver. However, if you intend to do SCPC as well, you may have to split the signal and feed the satellite receiver

with one leg and the SCPC receiver with the other. This means both legs must carry 950-1450 MHz signals and that the splitter must pass those frequencies. Ordinary TV splitters pass only those frequencies within the FM-VHF-UHF bands.

Order these satellite splitters through the TVRO catalog companies listed frequently in this column. Expect to pay ten to fifteen dollars each. Use only splitters that have a DC block on one side. Make sure that the pass side routes to the LNB and that the block side routes to the SCPC receiver. You should not have to use any additional isolators.

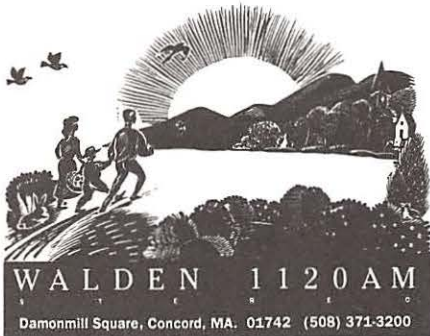
✓ "I am trying to locate a copy of *International Satellite Television Reception Guidebook* . . ." Bob Weiblen, Baltimore, MD

Bob, that's a pretty old book by TVRO standards and though I've never seen that particular book, I'd imagine that more updated information on the same subject could be found. I'd recommend: *1990 World Satellite Almanac*; *Hidden Signals of Satellite TV 2nd Edition*; *The Home Satellite TV Installation and Troubleshooting Manual* -- all available from the usual sources.

But how about it? Does anyone have a copy of the Stephen Birkill book that Bob is asking about? Let me know and I'll pass the info on to him.



Return to Walden Pond

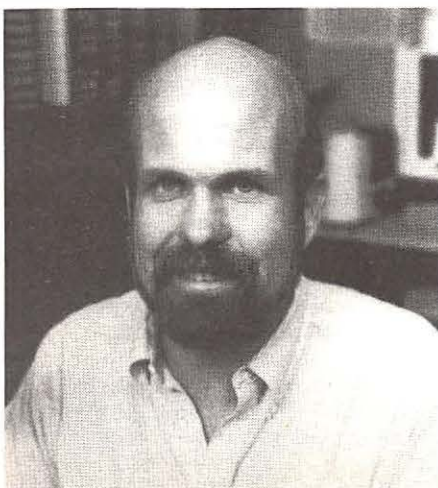


"I went to the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach, and not, when I came to die, discover I had not lived."

Henry David Thoreau wrote these words during his two years at Walden Pond, near Concord, Massachusetts. He studied the relationship of man living in the world of Mother Nature, and sought pleasure in simple ways.

Nearly one hundred and fifty years later, a renaissance of his philosophies is beginning to bloom in a radio station in the same locale. Walden Radio 1120 has brought Thoreau's spirit back to Concord.

Lloyd Simon and Dick Pleasants had a vision of a new kind of broadcasting for over a decade. They wanted to eliminate the complicated methodology of American broadcasting, and present a unique sound to suburban Boston. Pleasants was an established folk music announcer and Simon had expertise in market research. They combined their talents and carefully crafted a radio format unlike any other in the United States.



WADN Program Director Dick Pleasants

Their quest to air their format presented them with many challenges. The Boston area's radio dials were very crowded and there were no available frequencies. The FCC decided to allow new stations on clear channels once dominated by only one or two broadcasters per frequency nationwide. This action made 1120 kilohertz available for their use.

The Canadian government also wanted to allocate 1120 kHz to a new station in Sherbrook, Ontario. To prove that their broadcasts would not interfere with Canada, Simon and Pleasants were granted a special temporary license to test the signal of the new station. Passing that test, the FCC approved their proposal, but required them to construct four transmitting towers to create a carefully controlled area where they could be heard.

Erecting four towers in Concord was not immediately welcomed by the community. After several tries, the local Board of Selectmen approved a plan. Simon and Pleasants bought an old 23 acre gravel pit that was seething with pollutants. They cleverly restored the area to a wetlands wildlife habitat. The four towers reached up 199 feet apiece.

If they had been 200 feet tall, the Federal Aviation Agency would have required them to be outfitted with distracting and ugly warning lights, and be painted in eye-catching colors. The towers were painted to blend in with the surrounding forested area, and the project became a positive example for the future.

The new home of Walden 1120 AM is equally creative. The station is built inside a large old brick building which originally served as a textile mill. Damonhill Square is now the site of several businesses and a historic reminder of Concord's history. Huge machinery still remains in the structure, just a few feet away from WADN's beautiful new studios.

It is very unusual, in recent times, for a new AM radio station to come on the air on a frequency never before used in their locale. Walden Radio 1120 was built as a long-term investment and features brand-new equipment, from CD player to transmitter, and broadcasts in stereo. Besides the standard air studio and newsroom, WADN is building a live performance studio for concerts and a children's show to be broadcast from the premises.

The heart of the station is its unique sound. They call it "independent folk." The format is almost exclusively acoustical folk music, featuring artists like Karla Bonoff, Steve Goodman, Tom Rush, and



DJ Kate Borger in the WADN studios

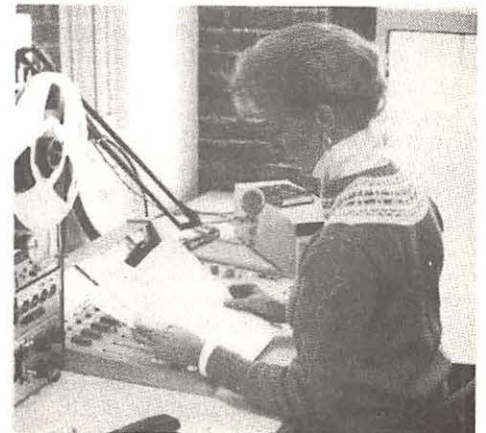
Peter, Paul, and Mary. The disk jockeys are very sensitive and loving towards the sound.

Co-founder Dick Pleasants has been the cornerstone of the Boston folk scene for two decades. He hosts the WADN morning show every weekday. Dick's rapport with the world of folk music was essential to the station's instant success, along with his mammoth record collection.

Kate Borger and Lindsay Ellison continue the music until six in the evening. Kate previously hosted several innovative shows on WNYC and WBAI in New York City, and Lindsay was a familiar voice on WGBH in Boston.

Between 6 p.m. and midnight, WADN shifts gears to an all-news format which is just as unique as their music. The Walden World Service consists of a live broadcast, via satellite, of the BBC News Hour from London, followed by the CBC's "As It Happens" news magazine from Canada, and The Christian Science Monitor's "Monitorradio" broadcast. This troika is repeated at 9 p.m. in its entirety.

Walden Radio's creativity continues on weekends with a children's hour, programs combining folk music with environmental



Rebecca Riddle-Whitlow in the newsroom



Lloyd Simon, President of WADN, on the roof next to the STL antenna and AP news satellite dish

concerns, and a storytelling show. WADN president Lloyd Simon was also the originator of The Talking Information Center, a broadcaster for the blind. He intends to install similar programming, aimed at the sight-impaired, on WADN.

Simon is creating a station that perfectly meets the needs of Concord and the surrounding villages. "All the local broadcasters think I'm totally out of my mind! To start a station that was like all the others wasn't the reason to spend 12 years trying. A station like that doesn't fit the neighborhood. Concord is very upscale and intelligent. The radio world has changed. You can't plop down another clone station. You have to capture the people's attention."

The station has been getting lots of attention and the immediate response has been overwhelming. Last October, the station presented its first open house live concert in their small parking lot in Damonhill Square. Thousands of people flooded the concert area and the surrounding neighborhood to hear Tom Rush, Patti Larkin, Christine Lavin, and other folk stars.

Leslie Lenoff, WADN's sales manager, is added insurance to the station's success. Before coming to Walden Radio 1120, she worked for *Town and Country* and *Scientific American* magazines reaching the same demographic group as WADN.

Leslie gathers advertisers to the station who are trying to reach the upscale, over 35 years old, audience that Walden Radio caters to. You'll hear commercials for a variety of music stores, real estate agents, designer clothiers, and fine restaurants on the station, leaving the pizza parlors and beauty shops behind.

By studying radio in its simplest terms and getting back to basics, Walden Radio 1120 is following in the footsteps of Thoreau. In their music and philosophy, they have become

innovators in radio that will assure their success in the 1990s.

Bits and Pieces

If you are within 100 miles of the tallest peak in the northeast, you can hear WHOM-FM loud and clear. They have just updated their signal to be more powerful than ever before, courtesy of the improved antenna system. They could have the tallest natural antenna tower around, too. Mount Washington is 6,288 feet tall, roughly equivalent to a 625 story building!

Although their 25 kilowatt transmitter and antenna are in New Hampshire, the WHOM studios are many miles away in Portland, Maine. News and weather reports cover four states: Vermont, New Hampshire, Maine, and Massachusetts. Listen to WHOM's easy listening sounds on 94.9 FM almost anywhere in New England!

Another famous former mayor hits the airwaves this month. After 12 years as mayor of New York City, the outspoken Ed Koch will be speaking daily on WNEW-AM. For two minutes each morning he will greet waking New Yorkers with his new feature show "How're We Doin'?" Koch will also be airing his views as a lecturer at New York University.

New Station Grants

The bands keep filling up with new entertainment! Look for these new signals in the near future: Evergreen, CO, 96.5; Crawford, GA, 102.1; Mahomet, IL, 105.9; Fredonia, Kansas, 104.1; Hutchinson, KS, 97.1; Wiggins, MS, 97.9; Ennis, MT, 97.3; Hastings, NE, 89.1; Lexington, NE, 88.7; Norfolk, NE, 89.3; Las Vegas, NV, 1100; Frankfort, NY, 94.9; Old Forge, NY, 94.1; and Williston, SC, 94.7.

Courtesy of *The M Street Journal*.

For Sale

A low frequency full-time AM station is now available in a great radio market in picturesque western Montana. The land and studio facilities are included in the deal.

The owners claim that it is "probably the best radio value in western Montana." Write to them at Box 30455, Billings, MT 59107.

If you're always dreaming about moving to Tahiti, this might be the next best thing. A 100 kilowatt FM station construction permit is for sale. If you buy the permit, your station would be built on the Big Island in Hawaii in beautiful Hilo. The asking price is one dollar a watt or \$100,000. For more information, call 904-373-8502.



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Just north of Houston, an east Texas class C2 FM station is on the block. It is located in a county of over 30,000 people and has billed over \$20,000 in monthly ad sales. The owners must sell quickly and is asking under \$300,000 -- terms are available. Contact Jamar and Associates, P.O. Box 160877, Ausitn, Texas, 78716, or call 512-327-9570

International Bandscan

If you visit Budapest, Hungary, this spring, you'll hear a radio station that you'll easily understand. Radio Bridge will broadcast exclusively in English on FM. The station was christened during President Bush's visit to the Hungarian capital last summer.

The BBC's Radio One Roadshow is a very popular visitor to dozens of towns and villages in Great Britain every summer. Disks are spun and announced from remote locations, and big audiences gather wherever the mobile studio pulls up.

Next summer, the sounds will bounce through space. The Beeb now has a mobile satellite link that will send signals from anywhere in the United Kingdom back to their headquarters in London. High quality stereo will be transmitted into space with 300 watts of power to be received and relayed by Eutelsat 1 -- 22,000 miles above.

Credits

Many thanks to everyone at Walden Radio 1120. Also, thanks to readers Alan Masyla and David Montgomery for their suggestions. Other sources include *World Broadcast News*, *Broadcasting*, *The M Street Journal*, and *Billboard* magazines.

You can be our biggest contributor! Write us about broadcast news in your area! We'd love to hear from you. Address your letter to: American Bandscan, P.O. Box 98, Brasstown, NC 28902. Until next month, happy trails!



Who's jamming who?

THAT CUBAN-AMERICAN RADIO WAR may be heating up again! John Demmitt writes from Pennsylvania to report he heard WHO Des Moines, Iowa, announce at 1111 UTC it was leaving the air for one minute to detect the source of interference on its frequency of 1040 kHz. The test failed, as the bubble jammer it was concerned about left the air at 1100 kHz, and in both cases Cuban Radio Taino could be heard in the background.

Some radio direction finding (RDF) work with a portable radio indicates the jammer and Radio Taino transmitters are not in the same area. Could the jammer be American and an attempt to put pressure on Cuba to withdraw its request for 1040 kHz?

Then again, the jammer might be Cuban and a reminder that Habana can stir things up on the airwaves when it wishes. John has been logging Radio Taino on 830 as well as 1040 and 1100 kHz. The station also uses 1160.

In Florida, Terry Krueger also reports receiving Radio Taino on the new frequency of 1100 kHz. Further, he indicates the audio is telco quality and thus a different transmitter site. Krueger notes the Miami Herald carried a report that Cuban TV-Rebelde is now being transmitted on all vacant channels in the Habana area. This is an apparent attempt to block reception of TV-Marti when transmissions begin.

At least test transmissions should be underway from the Florida Keys by the time you read this. We understand the balloon which will be used to help transmit the signal is already up.

This writer recently received a QSL letter from Radio Taino. It is audible in much of the United States when conditions are right. There is a good deal of English on this station, which also identifies as "Tour Radio from Havana." Try 1160 kHz first, as that is the frequency regularly used. However, you may find that, when activated, 830, 1040, or 1100 may give better results.

Reports can be sent to Radio Taino, Apartado 3040, Habana 3, Cuba. If possible, try to report in Spanish. It appears to get better results, but English will be understood.

Scotland

Terry Krueger also informs us that Scottish pirate Weekend Music Radio has added some new frequencies. In addition to

15043, which has been heard as far west as the state of Washington, they will be on 13720 with approximately 100 watts. There may also be tests on 21850. Low power is used on 6240 (6255 alternate) and 6235 (6310 alternate).

These frequencies would present a real challenge in North America, but are not impossible. Pat Murphy writes to also suggest 15640 and 15650 kHz. The station may seek a new address, but, for now anyway, reports can be sent to 42 Arran Close, Cambridge, England. WMR is an excellent verifier, and it has a new fluorescent QSL card!

The Euro-Update

• Martin Lester in England, Ary Boender in the Netherlands, and Jack Russell of Weekend Music Radio have all written to let us know Radio Caroline has returned! That is the good news. The bad news is she is only on 558 mediumwave, with no shortwave at present. Apparently the former short-wave transmitter has been converted to mediumwave use.

At present, power appears to be rather

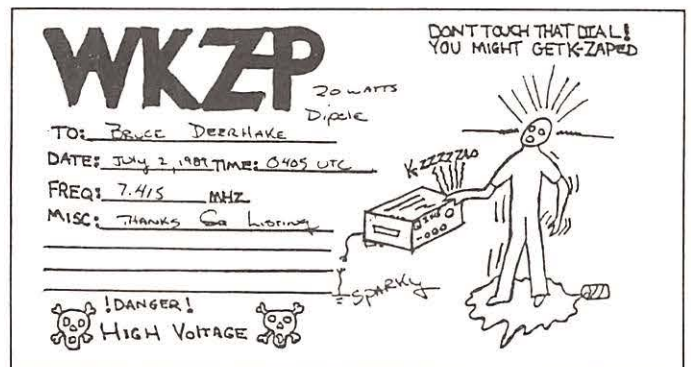
limited. Jack claims no matter what happens in the future, Caroline will always be back in some form, even if she has to return as a hobby pirate. For now she is still operating at sea on the Ross Revenge.

• Jack says that Ireland's Radio Dublin may return to both mediumwave and shortwave. It could be worth checking 6910 kHz from time to time. In the meantime it continues on FM.

A few other Irish pirates also manage to hang on. Two that you might catch on shortwave are Ozone Radio (the former Westside Radio, which was widely heard in the USA a few years ago) on 6820 and Donegal's WABC on 6320. Jack writes some former Irish pirates have now managed to obtain licenses under the country's still relatively new law.

• Meanwhile raids continue. Martin Lester reports that an English pirate, Radio Freedom, was closed by the authorities. However, it did manage to return just three days later, thanks to new equipment. The station had been operating from a building owned by a church but that did not provide sanctuary from arrest. They received a very

Both KZAP-FM
Sacramento and
Pirate K-ZAP
welcome "Outer
Limits" readers as
listeners



severe fine of 1,500 pounds. Their equipment, valued at 5,000 pounds, was seized.

Will the "Real" K-ZAP Please Stand Up!

Chief Engineer Kent Randles of Sacramento, California's KZAP-FM, 98.5 MHz writes to let us know that his station has been using the K-ZAP call letters long before a shortwave pirate K-ZAP (WKZP, 7415 kHz) commandeered them. He says they have been around since November 8, 1968, with an album-rock format from the very start.

Kent indicates he does not get many reception reports, but if the skip is good, and you do manage to hear his station, I think he would be happy to hear from you. Of course, the same is true of pirate K-ZAP. Reader Bruce Deerhake is the proud owner of the WKZP QSL we are reproducing with this column.

Here and There

● North American pirate Voice of Tomorrow made it across the Atlantic and was monitored by Jack Russell in Scotland on 15040 at 2330 UTC. Because of its controversial programming, some consider this a clandestine.

● In Connecticut Bob Doyle logged what claimed to be the premier broadcast of Hope Radio 16 America on 7375 at 2028. The station said it might use 1620 in the future.

● Nick Grace in Massachusetts hears every pirate around these days. He also bagged Hope Radio 16. He logged WLAR on 1620 kHz with a mere ten watts of power.

East Coast Pirate radio turned up on 7475 at 0320, while WBRI was found on 7482 at 0047. Pro-peace United World Radio was heard on 7415, while Radio Free Massachusetts was also on that same frequency. KNBS made it in on 7412. QSLs have been received from WKZP, Radio Comedy Club International, and Radio Free Massachusetts.

● Nick passes along some address information. While the Hilo, Hawaii, POB is still valid, P.O. Box 452, Wellsville, NY 14895, will yield faster results when you are trying to reach the many stations which rely on the Hilo drop. The Beaver Falls, Pennsylvania, drop has been replaced by Box 628, Slanesville, WV 25444.

Unfortunately, Nick and this writer have

both had reports to the Pirate Radio Network's Kingston, New York, box returned, and we have been unable to find a new address at this time.

Fraser Bonnett in Ohio was more fortunate. He got his Radio Clandestine reports to Kingston before the box was closed, and has received no less than three QSLs from the famous R.F. Burns. He also heard Colombian clandestine Radio Patria Libre on variable frequency 6755 with a strong signal.

● Fraser heard something unusual on a five-digit German numbers station on 7533 at 2347 UTC. The woman announcer coughed in the middle of the message! One wonders what that has done to intelligence operations around the world.

● Finally, Fraser sends along a report that the FCC raided and closed a ten-watt pirate, WKIL-FM, in Independence, Kentucky. The station had been on the air for two and one-half years, and the operator had tried to get a cable company to carry it.

● Pirate radio can bring out the "beast" in you. Both Dan McCormack in Massachusetts and Pat Murphy have logged WBST on 7488. This one has been around for a few years and likes to turn up on Friday the 13th, Halloween, and other similar suitable situations. It claims to be in Salem, Massachusetts. Reports go to Box 40554, Washington, DC 20016.

Dan also heard CHBO on 7411 and has recent loggings of Radio Clandestine, WBRI, and Weekend Music Radio.

● Up Minnesota way Alan Masyga has

again monitored Free Radio One on 7415 at 0119. The station was protesting both the IRS and abortion. Free Radio One is definitely one of the more political stations around these days.

Clandestine Matters

California reporter Mike Fern sent a very nice report on a number of clandestine logs and schedules. Here are a few items.

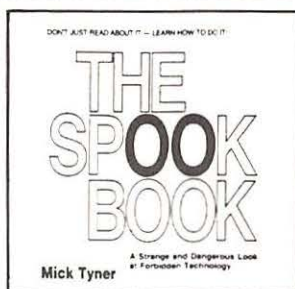
Mike heard anti-Castro and anti-Sandinista radio Caiman on 9965 at 0100. La Voz del CID's Radio Camilo Cienfuegos (also anti-Castro) is heard with an even stronger signal on 9942. If you are new to clandestine listening, go after these. They are not difficult and often quite interesting, even if you know absolutely no Spanish.

The Cambodian Khmer Rouge clandestine Voice of Democracy has reactivated according to Mike. Broadcasts originate in China. You might have a chance for this one on 6025 or 9440 from 1300 to 1400 and from 0900 to 1000 on 17533, 11870, and 15110. Recently the Communist Khmer Rouge have been claiming military success in Cambodia's seemingly endless civil war.

Mike has a tentative log of another Cambodian clandestine. This is Voice of the Khmer, which backs Prince Sihanouk, who once ruled that troubled country. He had what may have been a transmission from this one on 6326 from 1345 to 1400, but he notes a Vietnamese station is listed for 6322, and he was unable to get an ID.

We will try to use more of Mike's excellent report in a future column. Thanks again, everybody. See you next month.

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Beating the Blahs

January can be a let-down month. Most of the parties fade away after New Year's Eve. There aren't any particular long-standing holiday traditions for this month. About all you wind up doing is sitting around and waiting for those credit card bills to come rolling in and remind you how carried away you were by Christmas.

Unless, of course, you happen to like listening to low frequency aeronautical and marine beacons. Then January becomes a prime month, one that you look forward to and one that you savor all month long. I have one friend who takes one week of his vacation in January just so he can stay up till all hours chasing the elusive beacons that never seem to be around at other times.

Why January? For one thing, you never notice any thunderstorms at this time of year. That means that all of that pesky static is off playing in the southern hemisphere and letting us enjoy a little peace and quiet on our low frequencies. Next, low frequency signals seem to travel farther, or at least better, during the winter months. And the neighbors have their air conditioners turned off, eliminating one more source of disturbance.

In brief, January tends to give you a goodly number of clear, quiet nights. Just what the doctor ordered for good DXing.

Now that you know why January is a good month for low frequency beacon DXing, how do you tell whether you are cut out for this hobby? Ask yourself if you would enjoy going on a treasure hunt. There is a lot of treasure hunting in beacon DXing.

The thrill of hearing a rare beacon must rank up there with the miner finding bits of gold in the pan he's been using to wash his diggings. A beacon from Greenland or above the Arctic Circle is like finding an old ship wreck. You kind of knew it was there but you weren't sure you would ever find it. Treasure hunters make great DXers.

Do you like to feel satisfaction at accomplishing something? Maybe it won't be on the six o'clock news, but you know you did it. If every time you turned on your receiver the same beacons could all be heard, there would be nothing to it. But beacon life doesn't happen that way. Low frequency signals are very directional. If

something interferes between you and the beacon transmitter, you won't hear the beacon that time.

Even on good nights, there are differences. Thus, you have to be there when that special beacon can be heard. That is an accomplishment in itself.

So, if you like treasure hunts or satisfaction in your accomplishments or a challenge that is different each time you try it, then you are ready for prime time beacon DXing. Pull up a January night and go to work.

You'll need a receiver that can hear signals from 194 kHz to 435 kHz (plus another little section from 512 kHz to 530 kHz). It should also have CW and/or USB modes. After that, it doesn't seem to make that much difference. I see impressive loggings from Sony 2010s and NRD-525s. There are homebrew receivers, Kenwood 1000 and 5000, R-71As, Drake SPR-4s, and Hammarlund. As you get experience, you learn to work with the abilities of your own receiver to maximize your results.

Portables usually have a built-in antenna. You can rotate the receiver to achieve the loop benefits of the built-in. There are commercial loops and long wires. Again, you learn to work with what you have. Perhaps more than in any other aspect of radio, experience, practice, and perseverance are the keys to successful DXing.

Beacons transmit their IDs in Morse Code. Coastal stations send Morse Code (CW) via keyed carrier. If you are in the CW mode, the sound is strongest on the carrier frequency because that is where the keying exists.

Beacons, on the other hand, send the code on sidebands, usually upper sideband (USB). The sound will be strongest at the frequency of the sideband. If you use USB mode, the sound will be best when you are on the carrier frequency. You will get a tone of about one kHz, because the sideband is 1020 Hertz above the carrier.

Many Canadian beacons have the sound 400 Hertz above the carrier. You will notice the difference between the 400 Hertz tone of the Canadians and the 1020 Hertz tone of the U.S. beacons.

Don't be surprised if you hear some U.S. beacons apparently off frequency. A number of these beacons have both an upper and a lower sideband. If you are using USB and are on a frequency two kHz below the carrier frequency of the beacon, you will hear the Lower Sideband of the beacon. Sometimes this is helpful in catching a beacon that may have too much competition for the upper sideband to be heard easily.

I'm repeating the Morse Code table just so you will have a handy reference for January. It will appear in the column from time to time for those folks who can't always find one handy. Beacons send the same ID repeatedly, and they send slow enough that you can write down the dits and dahs if you need to. Then look them up in the table and you have the beacon's ID.

Let's get in there and give it a try. I'd be interested in hearing from some of you about how you do. If you can't identify what you've heard, send it along and maybe we can identify some of them.



MORSE CODE TABLE

A .- di-dah	M -- dah-dah	Y -.- dah-di-dah-dah
B -... dah-di-di-dit	N -. dah-dit	Z --- dah-dah-di-dit
C -. dah-di-dah-dit	O --- dah-dah-dah	1 .---- di-dah-dah-dah-dah
D -.. dah-di-dit	P --- di-dah-dah-dit	2 ..--- di-di-dah-dah-dah
E . dit	Q --- dah-dah-di-dah	3 ...-- di-di-di-dah-dah
F ... di-di-dah-dit	R -. di-dah-dit	4 di-di-di-di-dah
G -- dah-dah-dit	S ... di-di-dit	5 di-di-di-di-dit
H di-di-di-dit	T - dah	6 -.... dah-di-di-di-dit
I .. di-dit	U .. di-di-dah	7 ---- dah-dah-di-di-dit
J di-dah-dah-dah	V ... di-di-di-dah	8 ---- dah-dah-dah-di-dit
K -. dah-di-dah	W -- di-dah-dah	9 ---- dah-dah-dah-dah-dit
L -.. di-dah-di-dit	X -.. dah-di-di-dah	0 ----- dah-dah-dah-dah-

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AMT89

program

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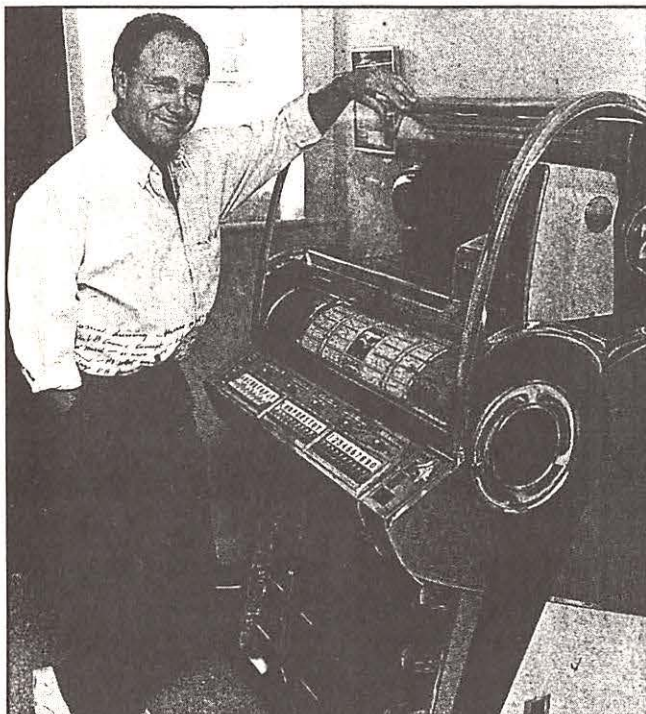
Ft. Lauderdale, Florida

Sunday

Jan 7th, 14th, 21st, 28th

- 0010 Kol Israel: Spotlight. A weekly news magazine.
- 0030 BBC: Composer of the Month. Profiles of great composers and selections from their works.
- 0036 Radio Budapest: Commentary. Interviews and in-depth analysis on the day's top news stories.
- 0040 HCJB (North America): Sounds of the Times. Ideas and opinions of North American young people.
- 0041 Radio Budapest: 168 Hours. Repeats of the week's top news stories.
- 0045 HCJB (North America): Focus 2000. A program about science and technology.

- 0101 BBC: Play of the Week. Hour-long drama selections.
- 0105 HCJB (North America): Discovery. A scientific exploration of the world.
- 0110 Kol Israel: Spotlight. See S 0010.
- 0115 Radio Japan (North America): Japan Music Scene. Music, background, and interviews.
- 0115 Radio Japan: This Week. The major events of the week, and current affairs topics in Japan.
- 0130 HCJB (North America): Family Foundations. Interviews and discussions about issues affecting today's family.
- 0136 Radio Budapest: Commentary. See S 0036.
- 0141 Radio Budapest: 168 Hours. See S 0041.
- 0200 HCJB: Get Set. Interviews and features from the world of sports.
- 0209 BBC: British Press Review. Survey of editorial opinion in the British press.
- 0210 Kol Israel: Spotlight. See S 0010.



Paul Burnett hosts "The Vintage Chart Show," a look back at rock music from the past, on the BBC World Service.

- 0215 BBC: Feature. Programming on various subjects.
- 0215 HCJB: Lifelines. Music, drama, and a topical talk.
- 0230 BBC: The Ken Bruce Show. A mix of popular music and entertainment news.
- 0230 HCJB: Happiness Is. Interviews, books, travel logs, and more.
- 0305 HCJB: Hour of Decision. Billy Graham's radio evangelical program.
- 0315 BBC: From Our Own Correspondent. In-depth news stories from correspondents worldwide.
- 0315 Radio Japan (Americas): Japan Music Scene. See S 0115.
- 0315 Radio Japan: This Week. See S 0115.
- 0330 BBC: Quiz. A quiz show of a topical nature (except January 7th, 14th: Quote, Unquote, a quiz show about quotes).
- 0330 HCJB: The King Is Coming. A religious program.
- 0400 HCJB: Radio Reading Room. Readings from new Christian books.
- 0430 BBC: A Taste of Soul. Robbie Vincent presents classic soul tracks and current music from the soul scene (except January 21st, 28th: The Story Lives On, a look at the traditions of British ballads).
- 0445 BBC: Personal View. A personal opinion on topical issues in British life.
- 0505 HCJB: Discovery. See S 0105.
- 0509 BBC: Twenty-Four Hours. Analysis of the main news of the day.
- 0515 Radio Japan: Commentary. Opinions on current news events worldwide.
- 0520 Radio Japan: Hello from Tokyo. See S 0520.
- 0530 BBC: Financial Review. A look back at the financial week.
- 0530 HCJB: Family Foundations. See S 0130.
- 0540 BBC: Words of Faith. People share how their scripture gives meaning to their lives.
- 0545 BBC: Letter from America. Alistair Cooke's distinctly British view of America.
- 0600 HCJB: Get Set. See S 0200.
- 0615 HCJB: Lifelines. See S 0215.

LEGEND

- * The first four digits of an entry are the program start time in UTC.
- * The time is followed by the station name, program name, and a brief summary of the program's content.
- * Some listings may be followed by "See X 0000." The letter stands for a day of the week:

S=Sunday M=Monday
T=Tuesday W=Wednesday
H=Thursday F=Friday
A=Saturday

The four digits stand for a time in UTC. Listeners should check back to that date and time to find out more about that particular program.

- * All broadcasts are listed in chronological order, starting on Sunday at 0000 UTC and ending on Saturday at 2359 UTC.
- * All days are in UTC. Remember that if you are listening in North

American prime time, it is actually the next morning UTC. For example, if you are listening to a program at 7:01 pm [EST] on your Thursday night, that's equal to 0001 UTC and therefore Friday morning UTC.

We suggest that you tune in to a program a few minutes before the schedule start time, as some stations have tentative schedules which may slightly vary. We invite listeners and stations to send program information to the program manager at the address above.

program

guide

- 0630 BBC: Jazz for the Asking. A jazz music request show.
- 0630 HCJB: Open Door. Contemporary music and thoughts for teenagers.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0715 Radio Japan: Commentary. See S 0515.
- 0720 Radio Japan: Hello from Tokyo. See S 0520.
- 0730 BBC: From Our Own Correspondent. See S 0315.
- 0745 BBC: Book Choice. Short reviews of current or future best-sellers.
- 0750 BBC: Waveguide. How to hear the BBC better.
- 1100 HCJB: Music in the Night. Religious music and inspiration.
- 1115 BBC: From Our Own Correspondent. See S 0315.
- 1115 Kol Israel: Mainstream. Consumer and community news from Israel.
- 1115 Radio Japan: Commentary. See S 0515.
- 1120 Radio Japan: Hello from Tokyo. See S 0520.
- 1130 BBC: Composer of the Month. See S 0030.
- 1130 HCJB: Morning Song. Music and thoughts to start the day.
- 1200 HCJB: Urban Alternative. A program for inner-city America.
- 1201 BBC: Play of the Week. See S 0101.
- 1230 HCJB: Happiness Is. See S 0230.
- 1300 HCJB: Mountain Meditations. Sunday thoughts from HCJB's president.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: Sports Roundup. The day's sports news.
- 1330 HCJB: Telling the Truth. Stuart Briscoe presents a religious program.
- 1345 BBC: Personal View. See S 0445.
- 1400 HCJB: Kids' Corner. Mr. Lizard and friends present a program for children.
- 1401 BBC: Colors. A discussion of various aspects of colors.
- 1415 Radio Japan: Commentary. See S 0515.
- 1420 Radio Japan: Hello from Tokyo. See S 0520.
- 1430 BBC: Anything Goes. Sounds from the BBC archives as requested by listeners.
- 1430 HCJB: Your Story Hour. Stories about character for children.
- 1500 HCJB: Songtime. John DeBrine mixes music with a religious message.
- 1515 BBC: Concert Hall. Classical music from the world's great concert halls.
- 1515 Radio Japan: Commentary. See S 0515.
- 1525 Radio Japan: DX Corner. Rika Kobayashi presents shortwave radio news, features, and reception reports.
- 1530 HCJB: Let My People Think. A program addressing questions of today's thinker.

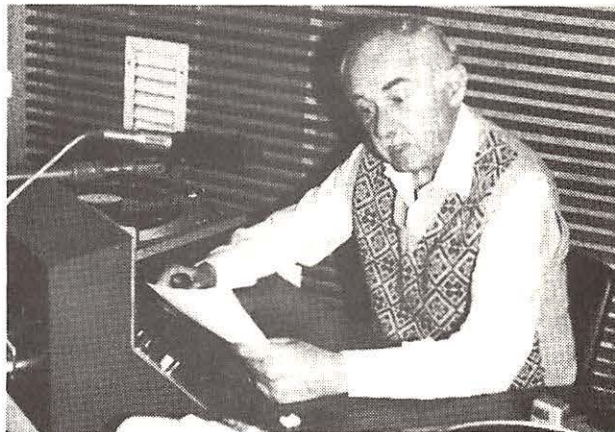
- 1544 Radio Japan: Japan Music Scene. See S 0115.
- 1600 HCJB: Unshackled. The comically melodramatic program about lives changed by religion.
- 1615 BBC: Feature. Programming on various subjects.
- 1645 BBC: Letter from America. See S 0545.
- 2305 BBC: Words of Faith. See S 0540.
- 2310 BBC: Book Choice. See S 0745.
- 2315 BBC: Letter from America. See S 0545.
- 2315 Radio Japan: Commentary. See S 0515.
- 2320 Radio Japan: Hello from Tokyo. See S 0520.
- 2330 BBC: Colors. See S 1401.

Monday

Jan 1st, 8th, 15th, 22nd, 29th

- 0010 Kol Israel: Calling All Listeners. A mailbag program.
- 0025 Kol Israel: DX Corner. Ben Dalfen presents DX news.
- 0030 BBC: In Praise of God. A half-hour program of worship.
- 0036 Radio Budapest: Commentary. See S 0036.
- 0040 HCJB (North America): Answers. Answers to questions on science and the Bible.
- 0041 Radio Budapest: Feature. Programming on various subjects.
- 0055 HCJB (North America): Sounds of the Times. See S 0040.
- 0100 HCJB (North America): HCJB Today. News about the distant ministries of HCJB.
- 0101 BBC: The Good Book. Modern perspectives

Arie Haskel does commentary on Kol Israel's English broadcasts.



- on The Bible and the stories told within it.
- 0110 Kol Israel: The Week in Review. Comment in the Israeli press.
- 0115 Radio Japan (North America): Let's Learn Japanese. Japanese language lessons for English speakers.
- 0115 Radio Japan: Commentary. See S 0515.
- 0125 Radio Japan: DX Corner. See S 1525.
- 0130 BBC: Readings from the Good Book. Brian Redhead presents dramatic readings from The Bible.
- 0135 HCJB (North America): Passport. News, music, and special features on Ecuador and the world.
- 0136 Radio Budapest: Commentary. See S 0036.
- 0141 Radio Budapest: Feature. See M 0041.
- 0144 Radio Japan: Japan Music Scene. See S 0115.
- 0145 BBC: Sounding Brass. An exploration of the world of brass bands (except January 1st, 8th: The Art of James Galway, a look at the great flautist).
- 0200 HCJB: Musica del Ecuador. Andean music with Jorge Zambrano.
- 0209 BBC: British Press Review. See S 0209.
- 0210 Kol Israel: Calling All Listeners. See M 0010.
- 0215 BBC: Andy Kershaw's World of Music. Exotic and innovative music from the world over.
- 0230 BBC: Science in Action. The latest in scientific developments.
- 0230 HCJB: Happiness Is. See S 0230.
- 0300 HCJB: The Sower. Michael Guido presents music and inspiration.
- 0315 BBC: Good Books. A recommendation of a book to read.

NEWS GUIDE

This is your guide to news broadcasts on the air. All broadcasts are daily unless otherwise noted by brackets. These brackets enclose day codes denoting days of broadcast. The codes are as follows:

S = Sunday M = Monday
T = Tuesday W = Wednesday
H = Thursday F = Friday
A = Saturday

We invite listeners and stations to send program information to the program manager.

- 0000 BBC: Newsdesk
- 0000 Christian Science Monitor: News
- 0000 Kol Israel: News
- 0000 KVOH: UPI Radio News
- 0000 Radio Australia: International Report
- 0000 Radio Beijing: News
- 0000 Radio Canada Int'l: News [S-M]; The World at Six [T-A]
- 0000 Radio Havana Cuba: Int'l News [M-A]
- 0000 Radio Moscow: News
- 0000 Radio New Zealand Int'l: News
- 0000 Radio Yugoslavia: News
- 0000 Spanish National Radio: News
- 0000 Voice of America: News
- 0000 WWCN: News [M-F]
- 0010 Radio Beijing: News About China
- 0030 Christian Science Monitor: News [T-F]
- 0030 KVOH: UPI Headline News
- 0030 Radio Budapest: News
- 0030 Radio Canada Int'l: News [S-M]
- 0030 Radio Havana Cuba: Newsbreak [M-A]
- 0030 Radio Moscow (World Serv): News in Brief [M]
- 0030 Radio Netherlands: News [T-S]
- 0030 Voice of America (Americas, East Asia): News (Special English) [T-S]

- 0030 Voice of America (East Asia): News (Special English) [M]
- 0045 Radio Berlin Int'l: News
- 0051 Spanish National Radio: News Summary [S]
- 0055 KUSW: News [T-S]
- 0055 WRNO: ABC News [W-H, A]
- 0100 BBC: News Summary
- 0100 Belize Radio One: Network News
- 0100 Christian Science Monitor: News
- 0100 Deutsche Welle: World News
- 0100 Kol Israel: News
- 0100 KVOH: UPI Radio News [T-A]
- 0100 Radio Australia: World and Australian News
- 0100 Radio Canada Int'l: News [S-M]
- 0100 Radio Havana Cuba: Int'l News [M-A]
- 0100 Radio Japan: News
- 0100 Radio Moscow: News
- 0100 Radio New Zealand Int'l: News
- 0100 Radio Prague: News
- 0100 Radiotelevisione Italiana: News
- 0100 Spanish National Radio: News
- 0100 Voice of America: News
- 0100 Voice of Indonesia: News
- 0115 Radio Havana Cuba: Cuban National News [M-A]

program guide

- 0315 HCJB: Youth Time Radio. Interviews and music for college students.
 0315 Radio Japan (Americas): Let's Learn Japanese. See M 0115.
 0315 Radio Japan: Commentary. See S 0515.
 0325 Radio Japan: DX Corner. See S 1525.
 0330 BBC: Anything Goes. See S 1430.
 0330 HCJB: Hour of Freedom. A religious message presented by Howard Jones.
 0344 Radio Japan: Japan Music Scene. See S 0115.
 0405 HCJB: Music in the Night. See S 1100.
 0430 BBC: Off the Shelf. A reading selected from the best of world literature.
 0445 BBC: Talks. Short talks on various subjects.
 0505 HCJB: Passport. See M 0135.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0515 Radio Japan: Commentary. See S 0515.
 0520 Radio Japan: Cross Currents. A current affairs program featuring views from Japan and abroad.
 0530 BBC: Waveguide. See S 0750.
 0530 HCJB: Musica del Ecuador. See M 0200.
 0536 Radio Japan: Let's Learn Japanese. See M 0115.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: Recording of the Week. A personal choice from the latest classical music releases.
 0551 Radio Japan: Commentary. See S 0515.
 0556 Radio Japan: Tokyo Pop-In. A short segment featuring a popular song from Japan.
 0600 HCJB: HCJB Today. See M 0100.
 0630 BBC: Colors. See S 1401.
 0630 HCJB: Music in the Night. See S 1100.
 0709 BBC: Twenty-Four Hours. See S 0509.

- 0715 Radio Japan: Commentary. See S 0515.
 0720 Radio Japan: Cross Currents. See M 0520.
 0730 BBC: Feature. See S 1615.
 0736 Radio Japan: Let's Learn Japanese. See M 0115.
 0751 Radio Japan: Commentary. See S 0515.
 0756 Radio Japan: Tokyo Pop-In. See M 0556.
 1100 HCJB: Music in the Night. See S 1100.
 1115 BBC: Health Matters. New developments in the world of medical science and fitness.
 1115 Kol Israel: Spectrum. A look at science and technology in Israel.
 1115 Radio Japan: Commentary. See S 0515.
 1120 Radio Japan: Cross Currents. See M 0520.
 1130 BBC: The Ken Bruce Show. See S 0230.
 1130 HCJB: Insight for Living. Charles Swindoll applies the Bible to life today.
 1136 Radio Japan: Let's Learn Japanese. See M 0115.
 1151 Radio Japan: Commentary. See S 0515.
 1156 Radio Japan: Tokyo Pop-In. See M 0556.
 1200 HCJB: Sound Words. Gil Rugh presents religious advice.
 1215 BBC: Ned Sherrin's Counterpoint. A musical quiz show (except January 29th: Screenplay, a film quiz show hosted by Iain Johnstone).
 1230 HCJB: Happiness Is. See S 0230.
 1245 BBC: Sports Roundup. See S 1330.
 1300 HCJB: Stories of Great Christians. Dramatized stories about Christian leaders past and present.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1315 HCJB: Our Daily Bread. Devotions from the Bible.
 1330 BBC: Feature. See S 1615.
 1330 HCJB: Morning in the Mountains. A live show

- of music and thoughts.
 1405 BBC: Outlook. Conversation, controversy, and color from Britain and the rest of the world.
 1415 Radio Japan: Commentary. See S 0515.
 1420 Radio Japan: Cross Currents. See M 0520.
 1430 BBC: Off the Shelf. See M 0430.
 1430 HCJB: Through the Bible. J. Vernon McGee presents a book-by-book study of the Bible.
 1436 Radio Japan: Let's Learn Japanese. See M 0115.
 1445 BBC: Feature. See S 0215.
 1451 Radio Japan: Commentary. See S 0515.
 1456 Radio Japan: Tokyo Pop-In. See M 0556.
 1500 HCJB: Joni and Friends. Help and advice, especially for the disabled, as offered by Joni Erickson-Tada.
 1505 HCJB: Shalom. A search for true peace in today's complex world.
 1515 BBC: The Good Book. See M 0101.
 1515 Radio Japan: Commentary. See S 0515.
 1520 HCJB: Psychiatry and You. Christian perspectives on dealing with personal problems.
 1520 Radio Japan: Cross Currents. See M 0520.
 1530 HCJB: Back to the Bible. A daily Bible study.
 1536 Radio Japan: Let's Learn Japanese. See M 0115.
 1545 BBC: Readings from the Good Book. See M 0130.
 1551 Radio Japan: Commentary. See S 0515.
 1556 Radio Japan: Tokyo Pop-In. See M 0556.
 1600 HCJB: Focus on the Family. A daily look at marriage, parenting, and social trends that affect the family.
 1615 BBC: Good Books. See M 0315.
 1615 Radio Budapest: Budapest Calling DX'ers. News about shortwave radio listening.
 1630 BBC: Health Matters. See M 1115.
 1645 BBC: The World Today. News analysis on a selected location or event in the news.
 2305 BBC: Commentary. Background to the news from a wide range of specialists.
 2310 BBC: Financial News. News of commodity prices and significant moves in currency and stock markets.
 2315 BBC: Poems by Post. Selected poems written by listeners (except January 22nd and 29th: The Literary North, a look at great English writers from Northern England).
 2315 Radio Japan: Commentary. See S 0515.
 2320 Radio Japan: Cross Currents. See M 0520.
 2330 BBC: Multitrack 1: Top 20. Tim Smith presents what's hot on the British pop music charts.
 2336 Radio Japan: Let's Learn Japanese. See M 0115.

Members of the English Service of Radio Budapest: Edit Nagy, Gyorgyi Jakobi, Ilona Kiss, Charlie Coutts, Laszlo Pinter, Agnes Bielik, Vera Sarkany, Eszter Samado, and Kornel Zepemovszky.



news guide cont'd from p.57

- 0130 Christian Science Monitor: News [T-F]
 0130 KVOH: UPI Headline News [T-A]
 0130 Radio Budapest: News
 0130 Radio Havana Cuba: News [M-A]
 0130 Radio Moscow (World Service): News in Brief
 0150 HCJB: News [T-A]
 0151 Radio Veritas Asia: World News [M-F]
 0155 Spanish National Radio: News Summary [S]
 0153 Radio Prague: News Wrap-Up
 0155 HCJB: News [S]
 0155 KUSW: News [T-S]
 0155 Radio Veritas Asia: World News [A]
 0155 Voice of Indonesia: News in Brief
 0200 BBC: World News
 0200 Christian Science Monitor: News
 0200 Deutsche Welle: World News
 0200 HCJB: News [M]
 0200 Kol Israel: News
 0200 KVOH: UPI Radio News [T-A]
 0200 Radio Australia: International Report
 0200 Radio Berlin Int'l: News
 0200 Radio Brasilia: News
 0200 Radio Havana Cuba: Int'l News [M-A]

- 0200 Radio Kiev: News
 0200 Radio Moscow: News
 0200 Radio New Zealand Int'l: News [A-S]
 0200 Radio RSA: News
 0200 RAE, Buenos Aires: News
 0200 Swiss Radio Int'l: News
 0200 Voice of America: News
 0200 Voice of Free China: News and Commentary
 0200 WWCR: News [M-F]
 0215 Radio Cairo: News
 0230 Christian Science Monitor (E.Africa): News [M]
 0230 Christian Science Monitor: News [T-F]
 0230 KVOH: UPI Headline News [T-A]
 0230 Radio Finland: Northern Report [T-A]
 0230 Radio Havana Cuba: Newsbreak [M-A]
 0230 R. Moscow (World Serv): News in Brief [S-M]
 0230 Radio Pakistan: News (Special English)
 0230 Radio Portugal: News [T-A]
 0230 Radio Tirana, Albania: News
 0245 Radio Berlin Int'l: News
 0255 KUSW: News [T-S]
 0300 BBC: World News
 0300 Belize Radio One: News
 0300 Christian Science Monitor: News
 0300 Deutsche Welle: World News

- 0300 HCJB: News [T-A]
 0300 KVOH: UPI Radio News [T-A]
 0300 Radio Australia: World and Australian News
 0300 Radio Beijing: News
 0300 Radio Canada Int'l: News [M-F]
 0300 Radio for Peace Int'l: News [T-A]
 0300 Radio Havana Cuba: Int'l News [M-A]
 0300 Radio Japan: News
 0300 Radio Moscow: News
 0300 Radio New Zealand Int'l: News [A-S]
 0300 Radio Prague: News
 0300 Voice of America: News
 0300 Voice of Free China: News and Commentary
 0300 WRNO: ABC News [F]
 0309 BBC: News About Britain
 0310 Radio Beijing: News About China
 0315 Radio Cairo: News
 0315 Radio France International: News
 0315 Radio Havana Cuba: Cuban National News [M-A]
 0330 Christian Science Monitor (E.Africa): News [M]
 0330 Christian Science Monitor: News [T-F]
 0330 KVOH: UPI Headline News [T-A]
 0330 Radio Berlin Int'l: News

program

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BULLETIN BOARD

SAY GOODBYE TO NATURE... NOW!: The BBC has canceled, or at least placed on long hiatus, "Nature Now," its program about developments in the world of nature. The program has been replaced by a series of "Talks," which can be heard on Mondays at 0445 UTC and Fridays at 1445 UTC. Presumably "Nature Now" will be incorporated in "Science in Action," the BBC's flagship science program. "Science in Action" can be heard on Mondays at 0230 UTC and on Fridays at 1615 UTC.

THE EIGHTIES ARE HISTORY: The BBC is airing a very special program on the 1980s. On December 31, 1989, at 2315 UTC (45

minutes before the start of the new year in London), the BBC will air "The End of the '80s Show". This program will look back on Reagan, Thatcher, Gorbachev, yuppies, Madonna, Khomeini, Navratilova, Charles and Diana, the Challenger, Live Aid, and much more. Presuming you get MT 45 minutes ahead of schedule, tune in to this extravaganza...

RULES FOR POSTING: "Bulletin Board" is open to your news and comments on shortwave radio programs. Send submissions to the program manager at the address on page 56.

- 2351 Radio Japan: Commentary. See S 0515.
2356 Radio Japan: Tokyo Pop-In. See M 0556.

Tuesday

Jan 2nd, 9th, 16th, 23rd, 30th

- 0010 Kol Israel: News-Word. Ideas and idioms used in reporting on Israel.
0015 Kol Israel: Spectrum. See M 1115.
0030 BBC: Megamix. A compendium of music, sport, fashion, health, travel, news and views for young people.
0036 Radio Budapest: Commentary. See S 0036.
0041 Radio Budapest: Feature. See M 0041.
0101 BBC: Outlook. See M 1405.
0110 Kol Israel: Concert Hall. Israeli classical music.
0115 Radio Japan: Commentary. See S 0515.
0120 Radio Japan: Cross Currents. See M 0520.
0125 BBC: Financial News. See M 2310.
0126 Radio Japan (North America): Tokyo Pop-In. See M 0556.
0130 BBC: Short Story. Brief tales written by BBC listeners.
0136 Radio Budapest: Commentary. See S 0036.
0136 Radio Japan: Let's Learn Japanese. See M 0115.
0141 Radio Budapest: Feature. See M 0041.
0145 BBC: Europe's World. A magazine program reflecting life in Europe and its links with other

- parts of the world.
0151 Radio Japan: Commentary. See S 0515.
0156 Radio Japan: Tokyo Pop-In. See M 0556.
0200 HCJB: DX Party Line. See S 0200.
0209 BBC: British Press Review. See S 0209.
0210 Kol Israel: Spectrum. See M 1115.
0215 BBC: Network UK. A look at the issues and events that affect the lives of people throughout the UK.
0230 BBC: Sports International. Feature program on a topic or person making sports headlines.
0230 HCJB: Happiness Is. See S 0230.
0230 Radio Budapest: Budapest Calling DX'ers. See M 1615.
0305 HCJB: Guidelines for Family Living. Help for the family from Harold Sala.
0315 BBC: The World Today. See M 1645.
0315 HCJB: Rendezvous. Dick Saunders presents Bible study and evangelism.
0315 Radio Japan: Commentary. See S 0515.
0320 Radio Japan: Cross Currents. See M 0520.
0326 Radio Japan (Americas): Tokyo Pop-In. See M 0556.
0330 BBC: John Peel. Tracks from newly released albums and singles from the contemporary music scene.
0330 HCJB: Grace Worship Hour. See S 1300.
0336 Radio Japan: Let's Learn Japanese. See M 0115.
0351 Radio Japan: Commentary. See S 0515.
0356 Radio Japan: Tokyo Pop-In. See M 0556.
0405 HCJB: Music in the Night. See S 1100.

- 0430 BBC: Off the Shelf. See M 0430.
0445 BBC: New Ideas. A radio shop window for new products and inventions.
0455 BBC: Book Choice. See S 0745.
0505 HCJB: Passport. See M 0505.
0509 BBC: Twenty-Four Hours. See S 0509.
0515 Radio Japan: Commentary. See S 0515.
0520 Radio Japan: Asia Now. A look at the ever-changing situation in present-day Asia.
0530 BBC: Financial News. See M 2310.
0536 Radio Japan: Let's Practice Japanese. A practice session for the week's language lesson.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0551 Radio Japan: Commentary. See S 0515.
0556 Radio Japan: Tokyo Pop-In. See M 0556.
0600 HCJB: DX Party Line. See S 0200.
0630 BBC: It's Not Only Rock 'n' Roll. A look at the cutting edge of rock music over the last 30 years.
0630 HCJB: Music in the Night. See S 1100.
0709 BBC: Twenty-Four Hours. See S 0509.
0715 Radio Japan: Commentary. See S 0515.
0720 Radio Japan: Asia Now. See T 0520.
0730 BBC: Europe's World. See T 0145.
0736 Radio Japan: Let's Practice Japanese. See T 0536.
0745 BBC: Network UK. See T 0215.
0751 Radio Japan: Commentary. See S 0515.
0756 Radio Japan: Tokyo Pop-In. See M 0556.
1100 HCJB: Music in the Night. See S 1100.
1115 BBC: Megamix. See S 0750.
1115 Kol Israel: With Me in the Studio. An interview with a studio guest.
1115 Radio Japan: Commentary. See S 0515.
1120 Radio Japan: Asia Now. See T 0520.
1125 BBC: Book Choice. See S 0745.
1130 BBC: Megamix. See T 0030.
1130 HCJB: Insight for Living. See M 1130.
1136 Radio Japan: Let's Practice Japanese. See T 0536.
1151 Radio Japan: Commentary. See S 0515.
1156 Radio Japan: Tokyo Pop-In. See M 0556.
1200 HCJB: Sound Words. See M 1200.
1215 BBC: Multitrack 1: Top 20. See M 2330.
1230 HCJB: Happiness Is. See S 0230.
1245 BBC: Sports Roundup. See S 1330.
1300 HCJB: Stories of Great Christians. See M 1300.
1309 BBC: Twenty-Four Hours. See S 0509.
1315 HCJB: Our Daily Bread. See M 1315.
1330 BBC: Network UK. See T 0215.
1330 HCJB: Guidelines for Living. See M 1330.
1345 BBC: A Taste of Soul (except January 23rd, 30th: The Story Lives On). See S 0430.
1400 HCJB: Insight. See M 1400.
1405 BBC: Outlook. See M 1405.
1415 Radio Japan: Commentary. See S 0515.

- 0330 Radio Havana Cuba: News [M-A]
0330 Radio Moscow (World Serv): News in Brief [S]
0330 Radio Netherlands: News [T-S]
0330 Radio Tirana, Albania: News
0350 Radio Yerevan: News
0350 Radiotelevisione Italiana: News
0353 Radio Prague: News Wrap-up
0355 KUSW: News [T-S]
0400 BBC: Newsdesk
0400 Christian Science Monitor: News
0400 Deutsche Welle: World News
0400 HCJB: News [M-A]
0400 Radio Australia: International Report
0400 Radio Beijing: News
0400 Radio Berlin Int'l: News
0400 Radio Canada Int'l: News [M-F]
0400 Radio Havana Cuba: Int'l News [M-A]
0400 Radio Moscow: News
0400 Radio New Zealand Int'l: News
0400 Radio RSA: News
0400 Radio Tanzania: News
0400 RAE, Buenos Aires: News
0400 Swiss Radio Int'l: News
0400 Voice of America: News
0410 Radio Beijing: News About China

- 0425 Radiotelevisione Italiana: News
0430 Christian Science Monitor (E.Africa): News [M]
0430 Christian Science Monitor: News [T-F]
0430 Radio Havana Cuba: Newsbreak [M-A]
0430 R. Moscow (World Serv): News in Brief [S-M]
0430 Radio Netherlands: News [M-A]
0430 Radio Tirana, Albania: News
0445 Radio Berlin Int'l: News
0455 KUSW: News [S, T-F]
0455 Radio Tanzania: News
0500 BBC: World News
0500 Christian Science Monitor: News
0500 Deutsche Welle: World News
0500 HCJB: News [S-M]; Latin American News [T-A]
0500 Kol Israel: News
0500 Radio Australia: World and Australian News
0500 Radio Havana Cuba: Int'l News [M-A]
0500 Radio Japan: News
0500 Radio Moscow: News
0500 Radio New Zealand Int'l: News
0500 Spanish National Radio: News
0500 Voice of America: News
0515 Radio Havana Cuba: Cuban National News [M-A]

- 0530 Christian Science Monitor (E.Africa): News [M]
0530 Christian Science Monitor: News [T-F]
0530 Radio Havana Cuba: News [M-A]
0530 Radio Moscow (World Service): News in Brief
0550 HCJB: News [T-A]
0551 Spanish National Radio: News Summary [S]
0555 HCJB: News [S]
0555 KUSW: News [S, T-F]
0600 BBC: Newsdesk
0600 Christian Science Monitor: News
0600 Deutsche Welle: World News
0600 HCJB: News [M]
0600 Radio Australia: International Report
0600 Radio Berlin Int'l: News
0600 Radio Havana Cuba: Int'l News [M-A]
0600 Radio Korea: News
0600 Radio Moscow: News
0600 Radio New Zealand Int'l: News
0600 Voice of America: News
0615 Radio Berlin Int'l: News
0615 Radio Canada Int'l: News [M-F]
0630 Christian Science Monitor: News [M-F]
0630 Radio Finland: Northern Report [T-A]
0630 Radio Havana Cuba: Newsbreak [M-A]
0630 Radio Moscow (World Serv): News in Brief [S]

program guide

- 1420 Radio Japan: Asia Now. See T 0520.
- 1430 BBC: Off the Shelf. See M 0430.
- 1430 HCJB: Through the Bible. See S 1430.
- 1436 Radio Japan: Let's Practice Japanese. See T 0536.
- 1445 BBC: Sounding Brass (except January 2nd, 9th: The Art of James Galway). See M 0145.
- 1451 Radio Japan: Commentary. See S 0515.
- 1456 Radio Japan: Tokyo Pop-In. See M 0556.
- 1500 HCJB: Joni and Friends. See M 1500.
- 1505 HCJB: Shalom. See M 1505.
- 1515 BBC: A Jolly Good Show. Dave Lee Travis presents listener record requests and dedications, and the UK's top ten albums.
- 1515 Radio Japan: Commentary. See S 0515.
- 1520 HCJB: Psychiatry and You. See M 1520.
- 1520 Radio Japan: Asia Now. See T 0520.
- 1530 HCJB: Back to the Bible. See M 1530.
- 1536 Radio Japan: Let's Practice Japanese. See T 0536.
- 1551 Radio Japan: Commentary. See S 0515.
- 1556 Radio Japan: Tokyo Pop-In. See M 0556.
- 1615 BBC: Omnibus. A half-hour program on practically any topic.
- 1645 BBC: The World Today. See M 1645.
- 2305 BBC: Commentary. See M 2305.
- 2310 BBC: Financial News. See M 2310.
- 2315 BBC: Concert Hall. See S 1515.
- 2315 Radio Japan: Commentary. See S 0515.
- 2320 Radio Japan: Asia Now. See T 0520.
- 2336 Radio Japan: Let's Practice Japanese. See T 0536.
- 2351 Radio Japan: Commentary. See S 0515.
- 2356 Radio Japan: Tokyo Pop-In. See M 0556.

Wednesday

Jan 3rd, 10th, 17th, 24th, 31st

- 0010 Kol Israel: With Me in the Studio. See T 1115.
- 0025 Kol Israel: Faith to Faith. A look at religion and Israeli communities.
- 0030 BBC: Omnibus. See T 1615.
- 0036 Radio Budapest: Commentary. See S 0036.
- 0040 HCJB (North America): Our Daily Bread. See M 1315.
- 0041 Radio Budapest: Sportarama. Results from European sports events in the week just past.
- 0045 HCJB (North America): Gateway to Joy. See T 0045.
- 0100 HCJB (North America): Passport. See M 0135.
- 0101 BBC: Outlook. See M 1405.
- 0110 Kol Israel: Israel Sound. The latest in pop and rock music.
- 0115 Radio Japan: Commentary. See S 0515.



The cerebral Ben Dalfen presents "DX Corner" on Kol Israel's Sunday transmissions.

- 0120 Radio Japan: Asia Now. See T 0520.
- 0125 BBC: Financial News. See M 2310.
- 0126 Radio Japan (North America): Tokyo Pop-In. See M 0556.
- 0130 BBC: Against the Grain. A look at how older crafts and industries have survived in the UK.
- 0136 Radio Budapest: Commentary. See S 0036.
- 0136 Radio Japan: Let's Practice Japanese. See T 0536.
- 0141 Radio Budapest: Sportarama. See W 0041.
- 0145 BBC: Country Style. David Allan presents British country music.
- 0151 Radio Japan: Commentary. See S 0515.
- 0156 Radio Japan: Tokyo Pop-In. See M 0556.
- 0200 HCJB: Saludos Amigos. Ken MacHarg presents an "international friendship" program.
- 0209 BBC: British Press Review. See S 0209.
- 0210 Kol Israel: With Me in the Studio. See T 1115.
- 0215 BBC: Health Matters. See M 1115.
- 0230 BBC: The Atlantic Story. The history of Atlantic Records, the popular music label.
- 0230 HCJB: Happiness Is. See S 0230.
- 0230 Radio Budapest: Budapest Calling DX'ers. See M 1615.
- 0305 HCJB: Guidelines for Family Living. See T 0305.
- 0315 BBC: The World Today. See M 1645.
- 0315 HCJB: Rendezvous. See T 0315.
- 0315 Radio Japan: Commentary. See S 0515.
- 0320 Radio Japan: Asia Now. See T 0520.
- 0325 Radio Japan (Americas): Tokyo Pop-In. See M 0556.
- 0330 BBC: Discovery. An in-depth look at scientific research.

- 0330 HCJB: Psychology for Living. Christian advice on issues of today.
- 0336 Radio Japan: Let's Practice Japanese. See T 0536.
- 0345 HCJB: Wonderful Words of Life. Messages from the Salvation Army.
- 0351 Radio Japan: Commentary. See S 0515.
- 0356 Radio Japan: Tokyo Pop-In. See M 0556.
- 0405 HCJB: Music in the Night. See S 1100.
- 0430 BBC: Off the Shelf. See M 0430.
- 0445 BBC: Country Style. See W 0145.
- 0500 HCJB: Passport. See M 0135.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0515 Radio Japan: Commentary. See S 0515.
- 0520 Radio Japan: Radio Japan Journal. Information on the latest developments in the news.
- 0530 BBC: Financial News. See M 2310.
- 0536 Radio Japan: Asian Crossroads. Events in Asia and the Pacific.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0551 Radio Japan: Commentary. See S 0515.
- 0556 Radio Japan: Tokyo Pop-In. See M 0556.
- 0600 HCJB: Saludos Amigos. See W 0200.
- 0630 BBC: Meridian. The world of the arts, including music, drama, and books.
- 0630 HCJB: Music in the Night. See S 1100.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0715 Radio Japan: Commentary. See S 0515.
- 0720 Radio Japan: Radio Japan Journal. See W 0520.
- 0730 BBC: Development '90. Aid and development issues.
- 0736 Radio Japan: Asian Crossroads. See W 0536.
- 0751 Radio Japan: Commentary. See S 0515.
- 0756 Radio Japan: Tokyo Pop-In. See M 0556.
- 1100 HCJB: Music in the Night. See S 1100.
- 1115 BBC: Country Style. See W 0145.
- 1115 Kol Israel: Israel Mosaic. A weekly magazine on life in Israel.
- 1115 Radio Japan: Commentary. See S 0515.
- 1120 Radio Japan: Radio Japan Journal. See W 0520.
- 1130 BBC: Meridian. See W 0630.
- 1130 HCJB: Insight for Living. See M 1130.
- 1136 Radio Japan: Asian Crossroads. See W 0536.
- 1151 Radio Japan: Commentary. See S 0515.
- 1156 Radio Japan: Tokyo Pop-In. See M 0556.
- 1200 HCJB: Sound Words. See M 1200.
- 1215 BBC: Affairs of the Harp. Music from harp composers of the 18th and 19th centuries.
- 1225 BBC: The Farming World. Issues in agriculture.
- 1230 HCJB: Happiness Is. See S 0230.
- 1245 BBC: Sports Roundup. See S 1330.

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- 0630 Radio Polonia: News
- 0630 Swiss Radio Int'l: News
- 0645 Radio Canada Int'l: News [M-F]
- 0655 HCJB: News [M-A]
- 0655 KUSW: News [S]
- 0700 BBC: World News
- 0700 BRT, Brussels: News [M-F]
- 0700 Christian Science Monitor: News
- 0700 Radio Australia: World and Australian News
- 0700 Radio Havana Cuba: Int'l News [M-A]
- 0700 Radio Japan: News
- 0700 Radio Moscow: News
- 0700 Radio New Zealand Int'l: News [A-S]
- 0700 Voice of Free China: News and Commentary
- 0715 Radio Havana Cuba: Cuban National News [M-A]
- 0730 Christian Science Monitor: News [M-F]
- 0730 Radio Havana Cuba: News [M-A]
- 0730 R. Moscow (World Serv): News in Brief [S-M]
- 0730 Radio Netherlands: News [M-A]
- 0755 KUSW: News [S]
- 0800 BBC: World News
- 0800 Christian Science Monitor: News

- 0800 Radio Australia: International Report
- 0800 Radio Finland: Northern Report [T-S]
- 0800 Radio Korea: News
- 0800 Radio Moscow (World Service): News
- 0800 Radio Tirana, Albania: News
- 0800 Voice of Indonesia: News
- 0830 Christian Science Monitor: News [M-F]
- 0830 Radio Finland: Northern Report [T-S]
- 0830 Radio Moscow (World Service): News in Brief
- 0830 Radio Netherlands: News [M-A]
- 0830 Swiss Radio Int'l: News
- 0845 Radio Berlin Int'l: News
- 0855 KUSW: News [S]
- 0855 Voice of Indonesia: News in Brief
- 0900 BBC: World News
- 0900 BRT, Brussels: News [M-F]
- 0900 Christian Science Monitor: News
- 0900 Deutsche Welle: World News
- 0900 Radio Australia: World and Australian News
- 0900 Radio Japan: News
- 0900 Radio Moscow (World Service): News
- 0900 Radio New Zealand Int'l: News
- 0930 Christian Science Monitor: News [M-F]
- 0930 R. Moscow (World Serv): News in Brief [S-M]
- 0955 KUSW: News [S]

- 1000 BBC: News Summary
- 1000 Christian Science Monitor: News
- 1000 Radio Australia: International Report
- 1000 Radio Berlin Int'l: News
- 1000 Radio Moscow (World Service): News
- 1000 Radio New Zealand Int'l: News
- 1000 Radio Tanzania: News
- 1000 Swiss Radio Int'l: News
- 1000 Voice of America: News
- 1030 Radio Moscow (World Serv): News in Brief [S]
- 1030 Radio Netherlands: News [M-A]
- 1045 Radio Berlin Int'l: News
- 1055 KUSW: News [S]
- 1100 BBC: World News
- 1100 Christian Science Monitor: News [M-F]
- 1100 Deutsche Welle: World News
- 1100 Kol Israel: News
- 1100 Radio Australia: World and Australian News
- 1100 Radio Beijing: News
- 1100 Radio Finland: Northern Report [T-F]
- 1100 Radio Japan: News
- 1100 Radio Korea: News
- 1100 Radio Moscow (World Service): News
- 1100 Radio New Zealand Int'l: News
- 1100 Radio RSA: News

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- 1300 HCJB: Stories of Great Christians. See M 1300.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1315 HCJB: Our Daily Bread. See M 1315.
 1330 BBC: Development '89. See W 0730.
 1330 HCJB: Morning in the Mountains. See M 1330.
 1405 BBC: Outlook. See M 1405.
 1415 Radio Japan: Commentary. See S 0515.
 1420 Radio Japan: Radio Japan Journal. See W 0520.
 1430 BBC: Off the Shelf. See M 0430.
 1430 HCJB: Through the Bible. See M 1430.
 1436 Radio Japan: Asian Crossroads. See W 0536.
 1445 BBC: Business Matters. See W 0430.
 1451 Radio Japan: Commentary. See S 0515.
 1456 Radio Japan: Tokyo Pop-In. See M 0556.
 1500 HCJB: Joni and Friends. See M 1500.
 1505 HCJB: Shalom. See M 1505.
 1515 BBC: Poems by Post (except January 24th, 31st: The Literary North). See M 2315.
 1515 Radio Japan: Commentary. See S 0515.
 1520 HCJB: Psychiatry and You. See M 1520.
 1520 Radio Japan: Radio Japan Journal. See W 0520.
 1530 BBC: You Asked For It. A story-telling game (except January 3rd, 31st: Two Cheers, a satirical look back at the year or month just past).
 1530 HCJB: Back to the Bible. See M 1530.
 1536 Radio Japan: Asian Crossroads. See W 0536.
 1551 Radio Japan: Commentary. See S 0515.
 1556 Radio Japan: Tokyo Pop-In. See M 0556.
 1600 HCJB: Focus on the Family. See M 1600.
 1615 BBC: It's Not Only Rock 'n' Roll. See T 0630.
 1645 BBC: The World Today. See M 1645.
 2305 BBC: Commentary. See M 2305.
 2310 BBC: Financial News. See M 2310.
 2315 BBC: Good Books. See M 0315.
 2315 Radio Japan: Commentary. See S 0515.
 2320 Radio Japan: Radio Japan Journal. See W 0520.
 2330 BBC: Multitrack 2. Graham Bannerman presents new pop music records, interviews, news, and competitions.
 2336 Radio Japan: Asian Crossroads. See W 0536.
 2351 Radio Japan: Commentary. See S 0515.
 2356 Radio Japan: Tokyo Pop-In. See M 0556.

Thursday

Jan 4th, 11th, 18th, 25th

- 0010 Kol Israel: Jewish News Review. A look at events affecting followers of Judaism.
 0015 Kol Israel: Living Here. A look at people who

- have made Israel their home.
 0030 BBC: You Asked For It (except January 4th: Two Cheers). See W 1530.
 0036 Radio Budapest: Commentary. See S 0036.
 0040 HCJB (North America): Our Daily Bread. See M 1315.
 0041 Radio Budapest: Feature. See M 0041.
 0045 HCJB (North America): Gateway to Joy. See T 0045.
 0100 HCJB (North America): Passport. See M 0135.
 0101 BBC: Outlook. See M 1405.
 0110 Kol Israel: Israel Mosaic. See W 1115.

- 0140 BBC: Book Choice. See S 0745.
 0141 Radio Budapest: Feature. See M 0041.
 0145 BBC: Society Today. A weekly look at the changes in Britain.
 0151 Radio Japan: Commentary. See S 0515.
 0156 Radio Japan: Tokyo Pop-In. See M 0556.
 0200 HCJB: Ham Radio Today. John Beck presents a program about amateur radio.
 0209 BBC: British Press Review. See S 0209.
 0210 Kol Israel: Living Here. See H 0015.
 0215 BBC: Network UK. See T 0215.
 0230 BBC: Assignment. Examinations of current



The Radio Japan open studio.

- 0115 Radio Japan: Commentary. See S 0515.
 0120 Radio Japan: Radio Japan Journal. See W 0520.
 0125 BBC: Financial News. See M 2310.
 0126 Radio Japan (North America): Tokyo Pop-In. See M 0556.
 0130 BBC: Waveguide. See S 0750.
 0136 Radio Budapest: Commentary. See S 0036.
 0136 Radio Japan: Asian Crossroads. See W 0536.

- topical issues.
 0230 HCJB: Happiness Is. See S 0230.
 0305 HCJB: Guidelines for Family Living. See T 0305.
 0315 BBC: The World Today. See M 1645.
 0315 HCJB: Rendezvous. See T 0315.
 0315 Radio Japan: Commentary. See S 0515.
 0320 Radio Japan: Radio Japan Journal. See W 0520.

- 1100 Swiss Radio Int'l: News
 1100 Trans World Radio, Bonaire: News [M-F]
 1100 Voice of America: News
 1105 Radio Pakistan: News (Special English)
 1109 BBC: News About Britain
 1110 Belize Radio One: News Summary [T-F]
 1110 Radio Beijing: News About China
 1120 Belize Radio One: News Summary [A]
 1125 Belize Radio One: News Summary [M]
 1130 Christian Science Monitor: News
 1130 R. Moscow (World Serv): News in Brief [S-M]
 1130 Radio Netherlands: News [M-A]
 1130 Radio Tirana, Albania: News
 1152 Radio RSA: News in Brief
 1155 KUSW: News [S]
 1200 BBC: News Summary [S]; Newsreel [M-A]
 1200 Christian Science Monitor: News [M-F]
 1200 Radio Australia: International Report
 1200 Radio Beijing: News
 1200 Radio Berlin Int'l: News
 1200 Radio Canada Int'l: News
 1200 Radio Finland: Northern Report [T-F]
 1200 Radio Moscow (World Service): News
 1200 Radio New Zealand Int'l: News
 1200 Radio Polonia: News

- 1200 Radio Yugoslavia: News
 1200 Swiss Radio Int'l: News
 1200 Voice of America: News
 1210 Radio Beijing: News About China
 1230 BRT, Brussels: News [M-S]
 1230 Christian Science Monitor: News
 1230 Radio Berlin Int'l: News
 1230 Radio Moscow (World Service): News in Brief
 1230 Radio Polonia: News
 1230 Trans World Radio, Bonaire: News [M-A]
 1245 Radio France International: News
 1300 BBC: World News
 1300 Belize Radio One: News
 1300 Christian Science Monitor: News
 1300 Christian Science Monitor: News [M-F]
 1300 Radio Australia: World and Australian News
 1300 Radio Canada Int'l: World Report [M-F]
 1300 Radio Finland: Northern Report [T-A]
 1300 Radio Moscow (World Service): News
 1300 Radio RSA: News
 1300 Radio Tanzania: News [A-S]
 1300 Trans World Radio, Bonaire: News [S]
 1300 Voice of America: News
 1315 Radio Berlin Int'l: News
 1325 HCJB: News [M-F]

- 1330 Christian Science Monitor: News [M-F]
 1330 R. Moscow (World Serv): News in Brief [S-M]
 1330 Swiss Radio Int'l: News
 1330 Voice of America: News (Special English)
 1345 Radio Berlin Int'l: News
 1352 Radio RSA: News in Brief
 1400 BBC: News Summary [A-S]; Five-Minute News [M-F]
 1400 Christian Science Monitor: News
 1400 Radio Australia: International Report
 1400 Radio Beijing: News
 1400 Radio Berlin Int'l: News
 1400 Radio Canada Int'l: News [S]
 1400 Radio France International: News
 1400 Radio Japan: News
 1400 Radio Korea: News
 1400 Radio Moscow (World Service): News
 1400 Radio Peace and Progress: News
 1400 Radio RSA: News
 1400 Radio Tirana, Albania: News
 1400 Voice of America: News
 1400 WWCR: News [M-F]
 1405 Radio Finland: Northern Report [T-A]
 1410 Radio Beijing: News About China
 1425 HCJB: News [M-F]

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- 0326 Radio Japan (Americas): Tokyo Pop-In. See M 0556.
 0330 BBC: Ned Sherrin's Counterpoint. See M 1215.
 0330 HCJB: Heaven and Home Hour. Christian messages of inspiration.
 0336 Radio Japan: Asian Crossroads. See W 0536.
 0351 Radio Japan: Commentary. See S 0515.
 0356 Radio Japan: Tokyo Pop-In. See M 0556.
 0405 HCJB: Music in the Night. See S 1100.
 0430 BBC: Off the Shelf. See M 0430.
 0445 BBC: Andy Kershaw's World of Music. See M



The control studio at HCJB's transmitter site in Pifo, Ecuador.

0215.
 0500 HCJB: Passport. See M 0135.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0515 Radio Japan: Commentary. See S 0515.
 0520 Radio Japan: Business and Science. Information on Japan's economy and developments in science and technology.
 0530 BBC: Financial News. See M 2310.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.
 0551 Radio Japan: Commentary. See S 0515.
 0556 Radio Japan: Tokyo Pop-In. See M 0556.
 0600 HCJB: Ham Radio Today. See H 0200.
 0630 BBC: Affairs of the Harp. See W 1215.
 0630 HCJB: Music in the Night. See S 1100.
 0640 BBC: The Farming World. See W 1225.
 0709 BBC: Twenty-Four Hours. See S 0509.
 0715 Radio Japan: Commentary. See S 0515.
 0720 Radio Japan: Business and Science. See H 0520.
 0730 BBC: Mediawatch. Keith Hindell monitors developments in communications.

- 0745 BBC: Network UK. See T 0215.
 0751 Radio Japan: Commentary. See S 0515.
 0756 Radio Japan: Tokyo Pop-In. See M 0556.
 1100 HCJB: Music in the Night. See S 1100.
 1115 BBC: New Ideas. See T 0445.
 1115 Kol Israel: Studio Three. A look at the arts, music, and culture.
 1115 Radio Japan: Commentary. See S 0515.
 1120 Radio Japan: Business and Science. See H 0520.
 1125 BBC: Book Choice. See S 0745.
 1130 BBC: Drama. A dramatic production in serial form (except January 18th, 25th: So Much Blood, a serial version of Simon Brett's thriller).
 1130 HCJB: Insight for Living. See M 1130.
 1151 Radio Japan: Commentary. See S 0515.
 1156 Radio Japan: Tokyo Pop-In. See M 0556.
 1200 HCJB: Sound Words. See M 1200.
 1215 BBC: Multitrack 2. See W 1830.
 1230 HCJB: Happiness Is. See S 0230.
 1245 BBC: Sports Roundup. See S 1330.
 1300 HCJB: Stories of Great Christians. See M 1300.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1315 HCJB: Our Daily Bread. See M 1315.
 1330 BBC: Network UK. See T 0215.
 1330 HCJB: Morning in the Mountains. See M 1330.
 1345 BBC: Folk in Britain/Jazz Scene UK. A look at folk or jazz music on the British Isles.
 1405 BBC: Outlook. See M 1405.
 1415 Radio Japan: Commentary. See S 0515.
 1420 Radio Japan: Business and Science. See H 0520.
 1430 BBC: Off the Shelf. See M 0430.
 1430 HCJB: Through the Bible. See M 1430.
 1445 BBC: Mediawatch. See H 0730.
 1451 Radio Japan: Commentary. See S 0515.
 1456 Radio Japan: Tokyo Pop-In. See M 0556.
 1500 HCJB: Joni and Friends. See M 1500.
 1505 HCJB: Shalom. See M 1505.
 1515 BBC: The Pleasure's Yours. Gordon Clyde presents classical music requests.
 1515 Radio Japan: Commentary. See S 0515.
 1520 HCJB: Psychiatry and You. See M 1520.
 1520 Radio Japan: Business and Science. See H 0520.
 1530 HCJB: Back to the Bible. See M 1530.
 1551 Radio Japan: Commentary. See S 0515.
 1556 Radio Japan: Tokyo Pop-In. See M 0556.
 1600 HCJB: Focus on the Family. See M 1600.
 1615 BBC: Assignment. See H 0230.
 1615 Radio Budapest: Budapest Calling DX'ers. See M 1615.
 1645 BBC: The World Today. See M 1645.

- 2305 BBC: Commentary. See M 2305.
 2310 BBC: Financial News. See M 2310.
 2315 BBC: Music Review. Classical music events and developments from around the world.
 2315 Radio Japan: Commentary. See S 0515.
 2320 Radio Japan: Business and Science. See H 0520.
 2351 Radio Japan: Commentary. See S 0515.
 2356 Radio Japan: Tokyo Pop-In. See M 0556.

Friday

Jan 5th, 12th, 19th, 26th

- 0010 Kol Israel: Ulpán of the Air. Hebrew language lessons for English speakers.
 0030 BBC: Best on Record. The best recordings of classical music works.
 0036 Radio Budapest: Commentary. See S 0036.
 0040 HCJB (North America): Our Daily Bread. See M 1315.
 0041 Radio Budapest: The Weeklies. A look at the top stories making news headlines in Hungary's weekly papers.
 0045 HCJB (North America): Gateway to Joy. See T 0045.
 0100 HCJB (North America): Passport. See M 0135.
 0101 BBC: Outlook. See M 1405.
 0110 Kol Israel: Studio Three. See H 1115.
 0115 Radio Japan: Commentary. See S 0515.
 0120 Radio Japan: Business and Science. See H 0520.
 0125 BBC: Financial News. See M 2310.
 0126 Radio Japan (North America): Tokyo Pop-In. See M 0556.
 0130 BBC: Folk in Britain/Jazz Scene UK. See H 1345.
 0136 Radio Budapest: Commentary. See S 0036.
 0141 Radio Budapest: The Weeklies. See F 0041.
 0145 BBC: The Learning World. A look at news, views, and ideas of those involved with education.
 0151 Radio Japan: Commentary. See S 0515.
 0156 Radio Japan: Tokyo Pop-In. See M 0556.
 0200 HCJB: Musical Mailbag. Listener letters with music requests.
 0209 BBC: British Press Review. See S 0209.
 0210 Kol Israel: Ulpán of the Air. See F 0010.
 0215 BBC: Seven Seas. A weekly program about ships and the sea.
 0230 BBC: Drama (except January 19th, 26th: So Much Blood). See H 1130.
 0230 HCJB: Happiness Is. See S 0230.
 0230 Radio Budapest: Budapest Calling DX'ers. See M 1615.

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- 1430 Christian Science Monitor: News [M-F]
 1430 Radio Moscow (World Serv): News in Brief [S]
 1430 Radio Netherlands: News [M-A]
 1430 Radio Polonia: News
 1445 Radio Berlin Int'l: News
 1500 BBC: Newsreel
 1500 Belize Radio One: News [M-A]
 1500 Christian Science Monitor: News
 1500 Deutsche Welle: World News
 1500 Radio Australia: World and Australian News
 1500 Radio Beijing: News
 1500 Radio Japan: News
 1500 Radio Moscow (World Service): News
 1500 Radio RSA: News
 1500 Voice of America: News
 1500 WHRI: News [M-A]
 1510 Radio Beijing: News About China
 1525 HCJB: News [M-F]
 1526 Radio Veritas Asia: World News [M-A]
 1530 BRT, Brussels: News [M-S]
 1530 Christian Science Monitor: News [M-F]
 1530 Deutsche Welle: African News [M-F]
 1530 Radio Moscow (World Service): News in Brief

- 1530 Radio Tirana, Albania: News
 1530 Swiss Radio Int'l: News
 1545 Radio Berlin Int'l: News
 1545 Radio Canada Int'l: News
 1552 Radio RSA: News in Brief
 1600 BBC: World News
 1600 Christian Science Monitor: News
 1600 Deutsche Welle: World News
 1600 Radio Australia: International Report
 1600 Radio France International: News
 1600 Radio Korea: News
 1600 Radio Moscow (World Service): News
 1600 Radio Polonia: News
 1600 Radio Portugal: News [M-F]
 1600 Radio Tanzania: News
 1600 Voice of America: News
 1609 BBC: News About Britain
 1625 HCJB: News [M-F]
 1630 Christian Science Monitor: News [M-F]
 1630 R. Moscow (World Serv): News in Brief [S-M]
 1630 Radio Netherlands: News [M-A]
 1630 Radio Peace and Progress: News
 1630 Radio Polonia: News
 1630 Voice of America (except Africa): News (Special English)

- 1645 Radio Berlin Int'l: News
 1645 Radio Berlin Int'l: News
 1655 KUSW: News [M-F]
 1700 BBC: World News [S-F]: News Summary [A]
 1700 Belize Radio One: News [M-F]
 1700 Christian Science Monitor: News
 1700 Radio Australia: World and Australian News
 1700 Radio Japan: News
 1700 Radio Moscow (World Service): News
 1700 Voice of America: News
 1715 Radio Canada Int'l: News
 1730 BRT, Brussels: News
 1730 Christian Science Monitor: News [M-F]
 1730 Radio Moscow (World Serv): News in Brief [S]
 1730 RAE, Buenos Aires: News
 1730 Swiss Radio Int'l: News
 1755 KUSW: News [M-A]
 1800 BBC: Newsdesk
 1800 Belize Radio One: Headline News [M-A]
 1800 Christian Science Monitor: News
 1800 Kol Israel: News
 1800 Radio Australia: International Report
 1800 Radio Bras, Brasilia: News
 1800 Radio Canada Int'l: News
 1800 Radio Kiev: News

program

guide

- 0305 HCJB: Guidelines for Family Living. See T 0305.
 0315 BBC: The World Today. See M 1645.
 0315 HCJB: Rendezvous. See T 0315.
 0315 Radio Japan: Commentary. See S 0515.
 0320 Radio Japan: Business and Science. See H 0520.
 0326 Radio Japan (Americas): Tokyo Pop-In. See M 0556.
 0330 BBC: Focus on Faith. Comment and discussion on the major issues in the worlds of faith.
 0330 HCJB: Christian Brotherhood Hour. Christian messages of inspiration.
 0351 Radio Japan: Commentary. See S 0515.
 0356 Radio Japan: Tokyo Pop-In. See M 0556.
 0405 HCJB: Music in the Night. See S 1100.
 0430 BBC: Off the Shelf. See M 0430.
 0445 BBC: Folk in Britain/Jazz Scene UK. See H 1345.
 0500 HCJB: Passport. See M 0135.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0515 Radio Japan: Commentary. See S 0515.
 0520 Radio Japan: Japan Panorama. Culture, traditions, and lifestyles of the Japanese people.
 0530 BBC: Financial News. See T 0125.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.
 0551 Radio Japan: Commentary. See S 0515.
 0556 Radio Japan: Tokyo Pop-In. See M 0556.
 0600 HCJB: Musical Mailbag. See F 0200.
 0630 BBC: Meridian. See W 0630.
 0630 HCJB: Music in the Night. See S 1100.
 0709 BBC: Twenty-Four Hours. See S 0509.
 0715 Radio Japan: Commentary. See S 0515.
 0720 Radio Japan: Japan Panorama. See F 0520.
 0730 BBC: Feature. Programming on various subjects (except January 19th, 26th: Eastern Europe: The Flight from Communism, the recent growth of democracy behind the Iron Curtain).
 0751 Radio Japan: Commentary. See S 0515.
 0756 Radio Japan: Tokyo Pop-In. See M 0556.
 1100 HCJB: Music in the Night. See S 1100.
 1115 BBC: The Learning World. See F 0145.
 1115 Kol Israel: Letter from Jerusalem. News commentary.
 1115 Radio Japan: Commentary. See S 0515.
 1120 Kol Israel: Thank Goodness It's Friday. A look at Judaism today.
 1120 Radio Japan: Japan Panorama. See F 0520.
 1130 BBC: Meridian. See W 0630.
 1130 HCJB: Insight for Living. See M 1130.
 1151 Radio Japan: Commentary. See S 0515.
 1156 Radio Japan: Tokyo Pop-In. See M 0556.

- 1200 HCJB: Sound Words. See M 1200.
 1215 BBC: Feature (except January 19th, 26th: Eastern Europe: The Flight from Communism). See F 0730.
 1230 HCJB: Happiness Is. See S 0230.
 1245 BBC: Sports Roundup. See S 1330.
 1300 HCJB: Stories of Great Christians. See M 1300.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1315 HCJB: Our Daily Bread. See M 1315.
 1330 BBC: John Peel. See T 0330.
 1330 HCJB: Morning in the Mountains. See M 1330.
 1405 BBC: Outlook. See M 1405.
 1415 Radio Japan: Commentary. See S 0515.
 1420 Radio Japan: Japan Panorama. See F 0520.
 1430 BBC: Off the Shelf. See M 0430.
 1430 HCJB: Through the Bible. See M 1430.
 1445 BBC: Talks. See M 0445.
 1451 Radio Japan: Commentary. See S 0515.
 1456 Radio Japan: Tokyo Pop-In. See M 0556.
 1500 HCJB: Joni and Friends. See M 1500.
 1505 HCJB: Shalom. See M 1505.
 1515 BBC: Music Review. See H 2315.
 1515 Radio Japan: Commentary. See S 0515.
 1520 HCJB: Psychiatry and You. See M 1520.
 1520 Radio Japan: Japan Panorama. See F 0520.
 1530 HCJB: Back to the Bible. See M 1530.
 1551 Radio Japan: Commentary. See S 0515.
 1556 Radio Japan: Tokyo Pop-In. See M 0556.
 1600 HCJB: Focus on the Family. See M 1600.
 1615 BBC: Science in Action. See M 0230.
 1645 BBC: The World Today. See M 1645.
 2305 BBC: Commentary. See M 2305.
 2310 BBC: Financial News. See M 2310.
 2315 BBC: Worldbrief. A roundup of the week's news headlines and human-interest happenings.
 2315 Radio Japan: Commentary. See S 0515.
 2320 Radio Japan: Japan Panorama. See F 0520.
 2330 BBC: Multitrack 3. Sarah Ward surveys the British contemporary music scene.
 2351 Radio Japan: Commentary. See S 0515.
 2356 Radio Japan: Tokyo Pop-In. See M 0556.

Saturday

Jan 6th, 13th, 20th, 27th

- 0010 Kol Israel: Letter from Jerusalem. See F 1115.
 0015 Kol Israel: Thank Goodness It's Friday. See F 1120.
 0030 BBC: From the Weeklies. A review of the weekly British press.
 0036 Radio Budapest: Commentary. See S 0036.
 0040 HCJB (North America): Our Daily Bread. See



TGIF on shortwave? That's what Efraim Geffen offers in "Thank Goodness It's Friday," a program conveying the atmosphere of the Jewish Sabbath, on Kol Israel's Friday broadcasts.

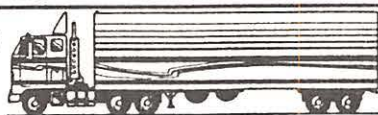
- M 1315.
 0041 Radio Budapest: Feature. See M 0041.
 0045 BBC: Recording of the Week. See M 0545.
 0045 HCJB (North America): Gateway to Joy. See T 0045.
 0100 HCJB (North America): Passport. See M 0135.
 0101 BBC: Outlook. See M 1405.
 0110 Kol Israel: Shabbat Shalom. Sabbath greetings and record requests.
 0115 Radio Japan: Commentary. See S 0515.
 0120 Radio Japan: Japan Panorama. See F 0520.
 0125 BBC: Financial News. See M 2310.
 0126 Radio Japan (North America): Tokyo Pop-In. See M 0556.
 0130 BBC: Just William. Excerpts from Richmal Crompton's book of the same name.
 0136 Radio Budapest: Commentary. See S 0036.
 0141 Radio Budapest: Feature. See M 0041.
 0145 BBC: Book Choice. See S 0745.
 0150 BBC: New Ideas. See T 0445.
 0151 Radio Japan: Commentary. See S 0515.
 0156 Radio Japan: Tokyo Pop-In. See M 0556.
 0200 HCJB: Sounds of Joy. Contemporary Christian music.
 0209 BBC: British Press Review. See S 0209.
 0210 Kol Israel: Thank Goodness It's Friday. See F 1120.
 0215 BBC: Network UK. See T 0215.
 0230 BBC: People and Politics. Background to the British political scene.
 0230 HCJB: Happiness Is. See S 0230.

- 1800 Radio Korea: News
 1800 Radio Moscow (World Service): News
 1800 Radio RSA: News
 1800 Radio Tanzania: News
 1800 Voice of America: News
 1800 WWCR: News [M-A]
 1815 Radio Berlin Int'l: News
 1830 Belize Radio One: Network News
 1830 Christian Science Monitor: News [M-F]
 1830 Radio Finland: Northern Report [M-F]
 1830 Radio Kuwait: News
 1830 Radio Moscow (World Service): News in Brief
 1830 Radio Netherlands: News [M-A]
 1830 Radio Polonia: News
 1830 Radio Yugoslavia: News
 1830 Swiss Radio Int'l: News
 1830 Voice of America: News (Special English)
 1852 Radio RSA: News in Brief
 1855 KUSW: News [M-F]
 1900 BBC: News Summary
 1900 Christian Science Monitor: News
 1900 Deutsche Welle: World News
 1900 HCJB: Latin American News [M-F]
 1900 Radio Australia: World and Australian News
 1900 Radio Canada Int'l: News [M-F]

- 1900 Radio Havana Cuba: Int'l News [M-A]
 1900 Radio Japan: News
 1900 Radio Moscow (World Service): News
 1900 Radio New Zealand Int'l: News
 1900 Radio Portugal: News [M-F]
 1900 Radio RSA: News
 1900 Radio Tanzania: News
 1900 Spanish National Radio: News
 1900 Voice of America: News
 1903 Radio Jamahiriya, Libya: Headlines
 1930 Christian Science Monitor: News [M-F]
 1930 Radio Berlin Int'l: News
 1930 Radio Budapest: News
 1930 Radio Canada Int'l: News [M-F]
 1930 Radio Havana Cuba: Cuban National News [M-T]; Newsbreak [W-A]
 1930 Radio Moscow (World Serv): News in Brief [A-S]
 1935 Radiotelevisione Italiana: News
 1947 Radio Jamahiriya, Libya: News
 1950 HCJB: News [M-F]
 1955 KUSW: News [M-A]
 2000 BBC: World News
 2000 Christian Science Monitor: News
 2000 Kol Israel: News
 2000 Radio Australia: International Report

- 2000 Radio Havana Cuba: Int'l News [M-A]
 2000 Radio Jordan: News
 2000 Radio Moscow (World Service): News
 2000 Radio New Zealand Int'l: News
 2000 Radio Polonia: News
 2000 Radio RSA: News
 2000 Voice of America: News
 2000 Voice of Indonesia: News
 2015 Radio Berlin Int'l: News
 2025 Radio Havana Cuba: Cuban National News [M-A]
 2025 Radiotelevisione Italiana: News
 2030 Christian Science Monitor: News [M-F]
 2030 Radio Havana Cuba: News [M-A]
 2030 Radio Korea: News
 2030 Radio Moscow (World Serv): News in Brief [S]
 2030 Radio Netherlands: News [M-A]
 2030 Radio Tirana, Albania: News
 2045 Radio Berlin Int'l: News
 2052 Radio RSA: News in Brief
 2055 KUSW: News [M-A]
 2055 Voice of Indonesia: News in Brief
 2100 BBC: News Summary
 2100 Belize Radio One: News [M-F]
 2100 BRT, Brussels: News

MOVING?



Let us know four to six weeks before you move and we will make sure your *MT* arrives on schedule. Just remove the mailing label and affix below. Then complete your new address (or any other corrections) in the space provided.

My new address: _____

Monitoring Times

P.O. Box 98
Brasstown
NC 28902

AFFIX OLD LABEL HERE

SUGGESTIONS? SOMETHING MISSING?

Let us know your corrections, additions, and suggestions of what you'd like to see to Program Manager Kannon Shanmugam at 4412 Turnberry Circle, Lawrence, Kansas 66047.

- | | | |
|---|---|--|
| 0230 Radio Budapest: Budapest Calling DX'ers. See M 1615. | 0630 HCJB: Music in the Night. See S 1100. | 1400 HCJB: Children's Bible Hour. Songs and stories for children. |
| 0305 HCJB: Guidelines for Family Living. See T 0305. | 0709 BBC: Twenty-Four Hours. See S 0509. | 1401 BBC: The Ken Bruce Show. See S 0230. |
| 0315 BBC: The World Today. See M 1645. | 0715 Radio Japan: This Week. See S 0115. | 1415 Radio Japan: This Week. See S 0115. |
| 0315 HCJB: Rendezvous. See T 0315. | 0730 BBC: From the Weeklies. See F 2315. | 1430 BBC: Sportsworld. Saturday sports, including a preview of English and Scottish soccer matches. |
| 0315 Radio Japan: Commentary. See S 0515. | 0745 BBC: Network UK. See T 0215. | 1430 HCJB: We Kids. A fast-moving program for children. |
| 0320 Radio Japan: Japan Panorama. See F 0520. | 1100 HCJB: Family Foundations. Details not available at press time. | 1500 HCJB: Critter County. Christian Wyrzten and her friendly critters present a children's program. (Yes, folks, it's no joke.) |
| 0326 Radio Japan (Americas): Tokyo Pop-In. See M 0556. | 1115 BBC: Just William. See A 0130. | 1515 BBC: Sportsworld. Saturday sports, including direct reports from more than a dozen key soccer contests. |
| 0330 BBC: The Vintage Chart Show. Paul Burnett presents top ten hits from the music charts of yesteryear. | 1115 Radio Japan: This Week. See S 0115. | 1515 HCJB: The Word Today. A discussion of Biblical themes. |
| 0330 HCJB: Unshackled. See S 1600. | 1130 BBC: Meridian. See W 0630. | 1515 Radio Japan: This Week. See S 0115. |
| 0351 Radio Japan: Commentary. See S 0515. | 1130 HCJB: Sounds of Joy. See A 0200. | 1530 HCJB: Moody Presents. Christian messages from the Moody Bible Institute. |
| 0356 Radio Japan: Tokyo Pop-In. See M 0556. | 1130 Radio Budapest: Budapest Calling DX'ers. See M 1615. | 1600 HCJB: Radio Reading Room. See S 0400. |
| 0405 HCJB: Music in the Night. See S 1100. | 1200 HCJB: Radio Reading Room. See S 0400. | 1615 BBC: Sportsworld. Commentary on an English or Scottish soccer match. |
| 0430 BBC: Here's Humph! All that jazz with Humphrey Lyttelton. | 1215 BBC: Multitrack 3. See F 2330. | 2305 BBC: Words of Faith. See S 0540. |
| 0445 BBC: Personal View. See A 0030. | 1230 HCJB: Happiness Is. See S 0230. | 2310 BBC: Book Choice. See S 0745. |
| 0505 HCJB: Passport. See M 0135. | 1245 BBC: Sports Roundup. See S 1330. | 2315 BBC: A Jolly Good Show. See T 1515. |
| 0509 BBC: Twenty-Four Hours. See S 0509. | 1300 HCJB: Adventures in Odyssey. Lively children's dramas from the 'Focus on the Family' team. | 2315 Radio Japan: This Week. See S 0115. |
| 0515 Radio Japan: This Week. See S 0115. | 1309 BBC: Twenty-Four Hours. See S 0509. | |
| 0530 BBC: Financial News. See M 2310. | 1330 BBC: Network UK. See T 0215. | |
| 0540 BBC: Words of Faith. See S 0540. | 1330 HCJB: Visit with Mrs. G. Mrs. G. presents Bible stories for children. | |
| 0545 BBC: The World Today. See M 1645. | 1345 BBC: Short Story. See T 0130. | |
| 0600 HCJB: The Christian's Hour. Christian messages of inspiration. | 1345 HCJB: Adventure Club. A weekly adventure program on Christianity for children. | |
| 0630 BBC: Meridian. See W 0630. | | |

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|--|--|---|
| 2100 Christian Science Monitor: News | 2200 KVOH: UPI Radio News | 2300 Belize Radio One: News [M-F] |
| 2100 Deutsche Welle: World News | 2200 Radio Australia: International Report | 2300 Christian Science Monitor: News |
| 2100 KVOH: UPI Radio News | 2200 Radio Berlin Int'l: News | 2300 KVOH: UPI Radio News |
| 2100 Radio Australia: World and Australian News | 2200 Radio Canada Int'l (Asia): News | 2300 Radio Australia: World and Australian News |
| 2100 Radio Finland: Northern Report [M-F] | 2200 Radio Canada Int'l (Western Europe): News [A-S]; The World at Six [M-F] | 2300 Radio Canada Int'l: News |
| 2100 Radio Japan: News | 2200 Radio Havana Cuba: Int'l News [M-A] | 2300 Radio for Peace Int'l: News [F] |
| 2100 Radio Moscow (World Service): News | 2200 Radio Moscow (World Service): News | 2300 Radio Japan: News |
| 2100 Radio New Zealand Int'l: News | 2200 Radiotelevisione Italiana: News | 2300 Radio Moscow: News |
| 2100 Radio Peace and Progress: News | 2200 RAE, Buenos Aires: News | 2300 Voice of America: News |
| 2100 Radio Yugoslavia: News | 2200 Voice of America: News | 2305 Radio Polonia: News |
| 2100 Spanish National Radio: News | 2200 Voice of Free China: News and Commentary | 2330 BRT, Brussels: News |
| 2100 Swiss Radio Int'l: News | 2230 Christian Science Monitor: News [M-F] | 2330 Christian Science Monitor: News [M-F] |
| 2100 Voice of America: News | 2230 Kol Israel: News | 2330 KVOH: UPI Headline News |
| 2130 Christian Science Monitor: News [M-F] | 2230 KVOH: UPI Headline News | 2330 Radio for Peace Int'l: News [M] |
| 2130 KVOH: UPI Headline News | 2230 Radio Havana Cuba: Cuban National News [M-A] | 2330 Radio Kiev: News |
| 2130 Radio Budapest: News | 2230 Radio Moscow (World Serv): News in Brief [A-S] | 2330 Radio Korea: News |
| 2130 Radio Canada Int'l: News | 2230 Radio Polonia: News | 2330 Radio Moscow (World Serv): News in Brief [A-S] |
| 2130 Radio Moscow (World Service): News in Brief | 2230 Voice of America: News (Special English) | 2330 Radio Tirana, Albania: News |
| 2130 Swiss Radio Int'l: News | 2245 Radio Berlin Int'l: News | 2335 Voice of Greece: News [S] |
| 2150 KUSW: News [M-F] | 2255 KUSW: News [M-A] | 2355 KUSW: News [M-A] |
| 2200 BBC: Newshour | 2300 BBC: World News [A-S]; Five-Minute News [M-F] | 2355 WRNO: ABC News [F] |
| 2200 Christian Science Monitor: News | | |

MT Monitoring Team

Greg Jordan,
Frequency Manager

1855-I Franciscan Terrace
Winston-Salem, NC 27127

Larry Miller

Wagontown, Pennsylvania

Richard A. Keen

Golden, Colorado

frequency

section

0000 UTC [7:00 PM EST/4:00 PM PST]

0000-0025	Radio Finland, Helsinki	9645	11755		
0000-0030	M Radio Norway International, Oslo	15165			
0000-0030	BBC World Service, London, England	5965	5975	6005	6175
		6195	7145	7325	9580
		9590	9915	11750	11945
		11955	15260	15360	17875
0000-0030	Kol Israel, Jerusalem	9930	9435	11605	
0000-0030	Radio Moscow N. American Service	6000	6045	7115	7150
		9685	9720	12050	15425
		17605	17700	17720	21470
0000-0050	Radio Pyongyang, North Korea	15115	15160		
0000-0055	Radio Beijing, China	9665	9770	11715	
0000-0100	Adventist World Radio-Asia, Guam	15125	15225		
0000-0100	All India Radio, New Delhi	6055	7215	9535	9910
		11715	11745	15110	
0000-0100	CBC Northern Quebec Service, Can	9625	(ML)		
0000-0100	CBN, St. John's, Newfoundland, Can	6160			
0000-0100	CBU, Vancouver, British Colombia	6160			
0000-0100	CFCF, Montreal, Quebec, Canada	6005			
0000-0100	CFCN, Calgary, Alberta, Canada	6030			
0000-0100	CHNS, Halifax, Nova Scotia, Canada	6130			
0000-0100	Christian Science World Svc, Boston	7400	9850	13760	
0000-0100	CKWX, Vancouver, British Colombia	6080			
0000-0100	CFRB, Toronto, Ontario, Canada	6070			
0000-0100	FEBC Radio Int'l, Philippines	15480			
0000-0100	KUSW, Salt Lake City, Utah	15580			
0000-0100	KVOH, Rancho Simi, California	17775			
0000-0100	Radio Australia, Melbourne	15140	15160	15240	15320
		15395	17750	17795	
0000-0100	Radio Beijing, Beijing, China	15130	17715	17855	
0000-0100	Radio Canada International, Montreal	5960	9755		

LEGEND

- * The first four digits of an entry are the broadcast start time in UTC. The second four digits represent the end time.
- * In the space between the end time and the station name is the broadcast schedule.

S=Sunday M=Monday T=Tuesday W=Wednesday
H=Thursday F=Friday A=Saturday

If there is no entry, the broadcasts are heard daily. If, for example, there is an entry of "M," the broadcast would be heard only on Mondays. An entry of "M,W,F" would mean Mondays, Wednesdays and Fridays only. "M-F" would mean Mondays through Fridays. "TEN" indicates a tentative schedule and "TES" a test transmission.

The last entry on a line is the frequency. Several codes may be found after a frequency as follows:

- * SSB indicates Single Sideband transmission.
- * v after a frequency indicates that it varies
- * Notations of USB and LSB (upper and lower sideband transmissions) usually refer only to the individual frequency after which they appear.
- * [ML] after a frequency indicates a multi-lingual transmission containing English-language programs. All other frequencies may be assumed to be English language programs directed to various parts of the world.
- * Listings followed by an asterisk (*) are for English lessons and do not contain regularly scheduled programming.

We suggest that you begin with the lower frequencies that a station is broadcasting on and work your way up the dial. Remember that there is no guarantee that a station will be audible on any given day. Reception conditions can change rapidly, though, and if it is not audible one night, it may well be on another.

0000-0100	Radio Havana Cuba	11820			
0000-0100	Radio Luxembourg, Junglinster	6090			
0000-0100	Radio Moscow World Service, USSR	7135	7370	9510	9790
		9815	12005	11800	15170
		15295	15420	17570	17610
		17655	17775	21690	21790
0000-0100	Radio New Zealand, Wellington	15485	17705		
0000-0100	Radio Sofia, Bulgaria	9700	11680		
0000-0100	Radio Tonga, Kingdom of Tonga	5025			
0000-0100	Spanish National Radio, Madrid	9630	11880		
0000-0100	Voice of America-Americas Service	5995	9775	9815	11580
		11740	15205		
0000-0100	Voice of America-Caribbean Service	6130	9455	11695	
0000-0100	Voice of America-East Asia Service	7120	9770	11760	15185
		15290	17735	17820	
0000-0100	WHRI, Noblesville, Indiana	7315	9495		
0000-0100	WRNO Worldwide, Louisiana	7355			
0000-0100	WVCR, Nashville, Tennessee	15690			
0000-0100	WYFR, Oakland, California	5985	9505	15440	
0030-0045	BBC English by Radio, London, Eng	6195	7145	11945	15280
		17875			
0030-0055	BRT, Brussels, Belgium	9925			
0030-0100	BBC World Service, London, England	5965	5975	6005	6175
		7325	9580	9590	9915
		11750	11955	15260	15360
0030-0100	HCJB, Quito, Ecuador	15230			
0030-0100	Radio Budapest, Hungary	6110	9520	9585	9835
		11910	15160		
0030-0100	Radio Kiev, Ukrainian SSR	7400	9765	9800	15180
		15455	17665		
0030-0100	Radio Moscow N. American Service	6000	6045	7115	7150
		7310	9685	9720	12050
		15425	17605	17700	17720
		21470			
0030-0100	Radio Netherlands Int'l, Hilversum	6020	6165	15315	
0030-0100	Radio for Peace Int'l, Costa Rica	7375	13660	21565	25945
0035-0100	HCJB, Quito, Ecuador	6080	11890		
0045-0100	Radio Berlin Int'l, East Germany	6080	11890	13690	
0045-0100	Radio Korea, Seoul, South Korea	15575			
0050-0100	Vatican Radio, Vatican City	6150	9605	11780	

0100 UTC [8:00 PM EST/5:00 PM PST]

0100-0105	Vatican Radio, Vatican City	6105	9605	11780
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HOW TO USE THE PROPAGATION CHARTS

Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location (they are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Useable Frequency [MUF] and the lower line the Lowest Useable Frequency [LUF] as indicated on the vertical axis of the graph.

While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!

frequency

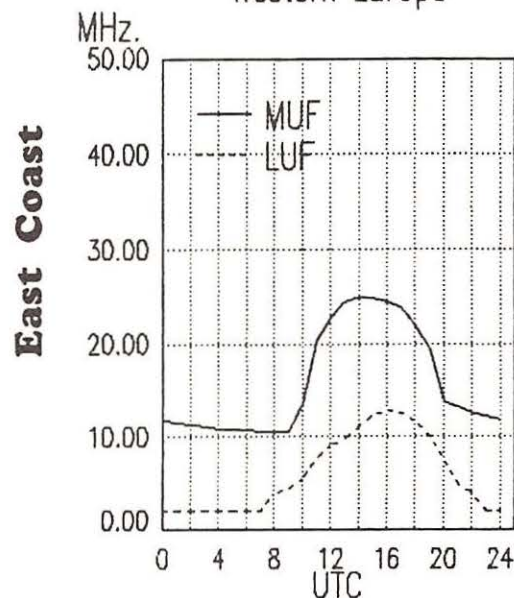
section

0100-0115	All India Radio, New Delhi	6055	7215	9535	9910
		11715	11745	15110	
0100-0125	RAI, Rome, Italy	9575	11800		
0100-0125	Kol Israel, Jerusalem	9930	9435	11605	
0100-0125	Radio Netherlands Int'l, Hilversum	6020	6165	15315	
0100-0130	CBC Northern Quebec Service, Can	9625	(ML)		
0100-0130	Lao National Radio, Vientiane	7113v			
0100-0130	Radio Berlin Int'l, East Germany	6080	11890	13690	
0100-0130	Radio Canada International, Montreal	5960	9755		
0100-0130	Radio Moscow N. American Service	6000	6045	7115	7150
		7310	9685	9720	12050
		15425	17605	17700	17720
		21470			
0100-0130	Radio Sweden, Stockholm	7225	9640		
0100-0145	BBC World Service, London, England	5965	5975	6005	6175
		7135	7325	9580	9590
		9915	11750	11955	15260
		15360			
0100-0145	Radio Yugoslavia, Belgrade	6005	5980	11735	
0100-0150	Deutsche Welle, Köln, West Germany	6040	6085	6145	9565
		9735	11865		
0100-0157	Radio Prague, Czechoslovakia	5930	7345	9540	11685
		11990	13715	15540	
		15280	21715		
0100-0200	M-FBBC (For China, Mongolia, Japan)	15280			
0100-0200	CBN, St. John's, Newfoundland, Can	6160			
0100-0200	CBU, Vancouver, British Colombia	6160			
0100-0200	CFCF, Montreal, Quebec, Canada	6005			
0100-0200	CFCN, Calgary, Alberta, Canada	6030			
0100-0200	CHNS, Halifax, Nova Scotia, Canada	6130			
0100-0200	Christian Science World Svc, Boston	7400	9850	13760	
0100-0200	CKWX, Vancouver, British Colombia	6080			
0100-0200	CFRB, Toronto, Ontario, Canada	6070			
0100-0200	FEBC Radio Int'l, Philippines	15480			
0100-0200	HCJB, Quito, Ecuador	9745	11775	15155	15230
0100-0200	KUSW, Salt Lake City, Utah	11695			
0100-0200	T-A KVOH, Rancho Simi, California	17775	(ML)		
0100-0200	RAE, Buenos Aires, Argentina	11710			
0100-0200	Radio Australia, Melbourne	15160	15180	15240	15320
		15395	17715	17750	17795
0100-0200	A,S Radio Canada International, Montreal	5960	9535	9755	11820
		11845	11940	13720	
0100-0200	Radio Havana Cuba	11820			
0100-0200	Radio Japan, Tokyo	17810	17835	17845	
0100-0200	Radio Luxembourg, Junglinster	6090			
0100-0200	Radio Moscow World Service, USSR	7135	9790	9815	11800
		15140	15170	15295	15420
		17570	17610	17655	17675
		17775	17825	17890	21635
		21690	21790		
		15485	17705		
0100-0200	Radio New Zealand	5025			
0100-0200	Radio Tonga, Kingdom of Tonga	9630	11880		
0100-0200	Spanish National Radio, Madrid	5995	9775	9815	11580
0100-0200	Voice of America-Americas Service	11740	15205		
		6130	9455		
0100-0200	Voice of America-Caribbean Service	7115	7205	9740	11705
0100-0200	Voice of America-East Asia Service	15250	21525		
		11744	11788		
0100-0200	Voice of Indonesia, Jakarta	7355			
0100-0200	WRNO Worldwide, Louisiana	15690			
0100-0200	IRR WWCR, Nashville, Tennessee	5985	9505		
0100-0200	WYFR, Oakland, California	9395	9420	11645	
0130-0140	Voice of Greece, Athens	9870	9875	13730	
0130-0200	Radio Austria International, Vienna	6110	9520	9585	9835
0130-0200	Radio Budapest, Hungary	11910	15160		
0130-0200	Radio Moscow N. American Service	6000	6045	7115	7150
		7310	9685	9700	9720
		12050	15425	17605	17700
		17720	21470		
0130-0200	Radio for Peace Int'l, Costa Rica	7375	13660	21565	25945
0130-0200	Radio Veritas-Asia, Philippines	15220	15360		
0130-0200	TENVoice of the Democratic Alliance of Burma (clandestine: Thai/Burmese border)	7135	(ML)		
0145-0200	BBC Alternative Programming, London	5965	7135	9580	11955
		15380			
0145-0200	BBC World Service, London, England	5975	6005	6175	7325
		9590	9915	11750	15260
		15360			

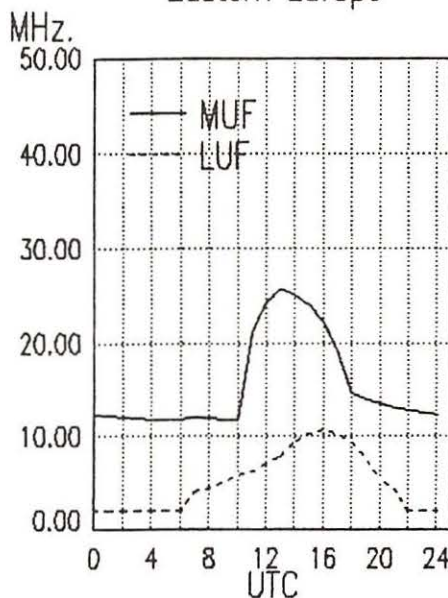
0200 UTC [9:00 PM EST/6:00 PM PST]

0200-0215	Vatican Radio, Vatican City	7125	9650	11750
0200-0220	Radio Veritas-Asia, Philippines	15220	15360	
0200-0225	Kol Israel, Jerusalem	9435	9930	11605
0200-0230	BBC Alternative Programming, London	7135	9580	11955
0200-0230	BBC World Service, London, England	5975	6005	6050
		7325	9590	9915
		11750		
		15260	15360	

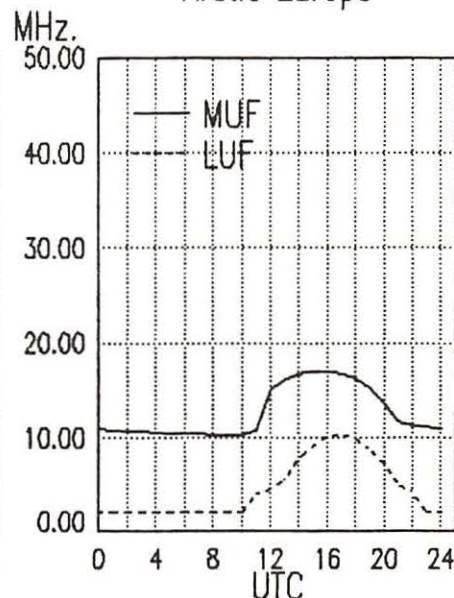
East Coast To
Western Europe



East Coast To
Eastern Europe



East Coast To
Arctic Europe

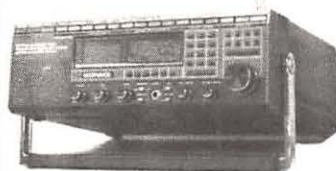


frequency

section

0200-0230	M-F FEBC Radio Int'l, Philippines	15480			
0200-0230	Swiss Radio International, Berne	6095	6135	9725	9885
		12035	17730		
0200-0230	Voice of America-Americas Service	5995	9775	9815	11580
		15205			
0200-0245	Radio Berlin Int'l, East Germany	6080	11890	13690	
0200-0250	Deutsche Welle, Koln, West Germany	6035	7285	9690	11945
0200-0250	Radio Bras, Brasilia, Brasil	11745			
0200-0300	Adventist World Radio-Asla, Guam	13720			
0200-0300	M-F BBC (For China, Mongolia, Japan)	15280	21715		
0200-0300	CBC Northern Quebec Service, Can	9625			
0200-0300	CBN, St. John's, Newfoundland, Can	6160			
0200-0300	CBU, Vancouver, British Colombia	6160			
0200-0300	CFCF, Montreal, Quebec, Canada	6005			
0200-0300	CFCN, Calgary, Alberta, Canada	6030			
0200-0300	CHNS, Halifax, Nova Scotia, Canada	6130			
0200-0300	Christian Science World Svc, Boston	9455	9850	13760	
0200-0300	CKWX, Vancouver, British Colombia	6080			
0200-0300	CFRB, Toronto, Ontario, Canada	6070			
0200-0300	HCJB, Quito, Ecuador	9745	11775	15155	
0200-0300	KUSW, Salt Lake City, Utah	11695			
0200-0300	Radio Australia, Melbourne	15180	15240	17715	17750
		17795			
0200-0300	Radio Bucharest, Romania	5990	9510	9570	11830
		11940	15380		
0200-0300	Radio Cairo, Egypt	9475			
0200-0300	M-F Radio Canada International, Montreal	9535	11845	11940	13720
0200-0300	Radio Havana Cuba	9710	11820		
0200-0300	Radio Luxembourg, Junglinster	6090			
0200-0300	Radio Moscow N. American Service	6000	6045	7115	7150
		7310	9685	9700	9720
		12050	15425	17700	17720
0200-0300	Radio Moscow World Service, USSR	7135	7370	9780	12045
		15140	15170	15295	15420
		17570	17590	17610	17655
		17675	17775	17825	17890
		21635	21690	21790	
0200-0300	Radio New Zealand, Wellington	15485	17705		
0200-0300	Radio RSA, Johannesburg, S. Africa	6010	9580	9615	11730
		11760	11820	11935	
0200-0300	Radio Tonga, Kingdom of Tonga	5025			
0200-0300	RAE, Buenos Aires, Argentina	9690	11710		
0200-0300	Voice of America-South Asia Service	7115	7205	9740	11705
		15250	21525		

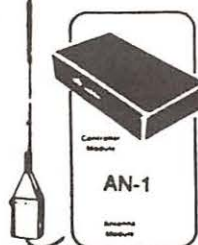
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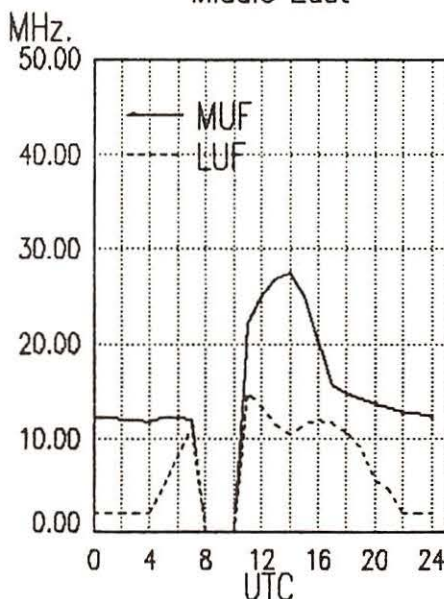


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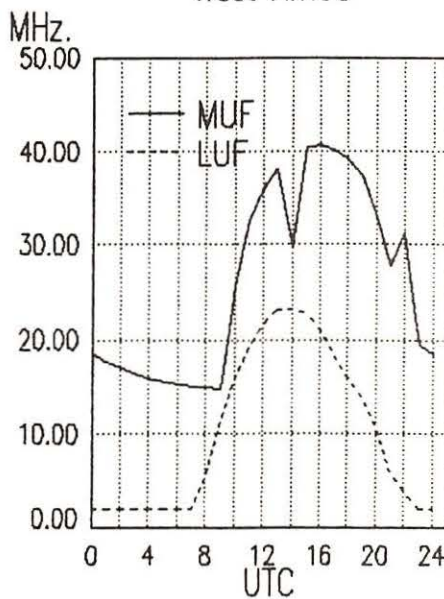
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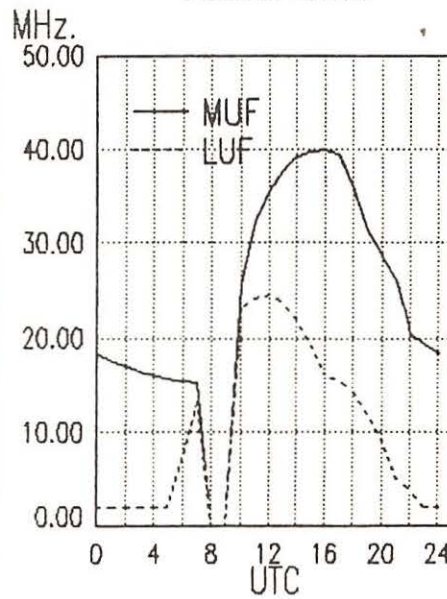
East Coast To
Middle East



East Coast To
West Africa



East Coast To
Central Africa



East Coast

frequency

section

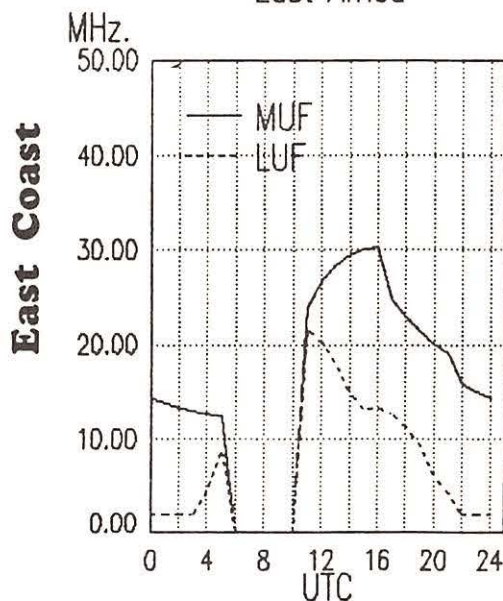
0200-0300	TENVoice of the Democratic Alliance of Burma (clandestine: Thai/Burmese border)	7135 (ML)			
0200-0300	Voice of Free China, Taiwan	5950	7445	9680	11740
		11860	15345		
0200-0300	WHRI, Noblesville, Indiana	7315	9495		
0200-0300	WRNO Worldwide, Louisiana	7355			
0200-0300	IRR WWCR, Nashville, Tennessee	7520			
0200-0300	WYFR, Oakland, California	5985	9505		
0230-0245	Radio Budapest, Hungary	6110	9520	9585	9835
		11910	15160		
0230-0300	BBC World Service, London, England	5975	6005	6050	6175
		7135	7325	9915	11750
		11955	15260	15360	
0230-0300	T-A Radio Portugal, Lisbon	9600	9680	9705	11840
0230-0300	Radio Sweden, Stockholm	9695	11705		
0230-0300	Radio Tirana, Albania	9762v			
0245-0300	Radio Berlin Int'l, East Germany	6080	11785	11890	15125
0255-0300	Trans World Radio, Bonaire	9535	11930		

0300 UTC [10:00 PM EST/7:00 PM PST]

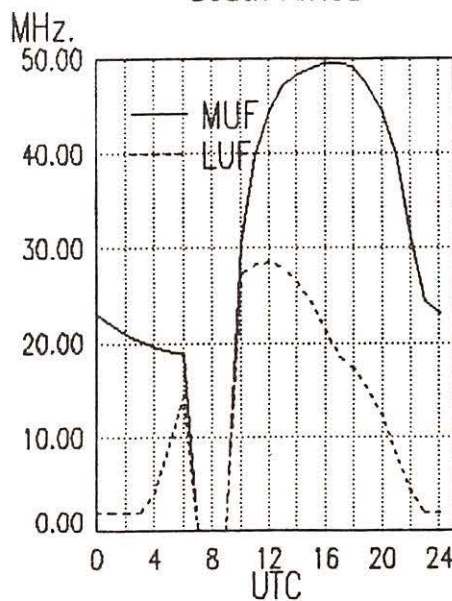
0300-0315	BBC English by Radio, London	11730	11740	15420	
0300-0315	BBC World Service, London, England	3255	5975	6005	6050
		6175	6190	6195	7135
		7325	9410	9600	9670
		9915	11750	11760	11845
		11955	12095	15220	15260
		15310	15420	17705	
0300-0330	Radio Berlin Int'l, East Germany	6080	11785	11890	15125
0300-0330	Radio Cairo, Egypt	9475			
0300-0330	Radio Canada International, Montreal	9645			
0300-0330	Radio Japan, Tokyo	9645	17825		
0300-0330	Radio Kiev, Ukrainian SSR	7400	9765	9800	15180
		15455	17665		
0300-0330	Radio for Peace Int'l, Costa Rica	7375	13660	21565	25945
0300-0330	TENVoice of the Democratic Alliance of Burma (clandestine: Thai/Burmese border)	7135 (ML)			
0300-0350	Deutsche Welle, Köln, West Germany	6010	6085	6120	6130
		9545	9605	9700	
0300-0355	Radio Beijing, China	9690	9770	11715	17855
0300-0357	Radio Prague, Czechoslovakia	5930	7345	9540	11685
		11990	13715	15540	
0300-0400	CBN, St. John's, Newfoundland, Can	6160			
0300-0400	CBU, Vancouver, British Columbia	6160			

0300-0400	CFCF, Montreal, Quebec, Canada	6005			
0300-0400	CFCN, Calgary, Alberta, Canada	6030			
0300-0400	CHNS, Halifax, Nova Scotia, Canada	6130			
0300-0400	Christian Science World Svc, Boston	9455	9850	13760	
0300-0400	CKWX, Vancouver, British Columbia	6080			
0300-0400	CFRB, Toronto, Ontario, Canada	6070			
0300-0400	Faro del Caribe, San Jose, Costa Rica	5055			
0300-0400	HCJB, Quito, Ecuador	11775	15155		
0300-0400	KUSW, Salt Lake City, Utah	9815			
0300-0400	Radio 5, Johannesburg, South Africa	4880			
0300-0400	Radio Australia, Melbourne	11945	15160	15240	15320
		17715	17750	17795	
0300-0400	Radio Beijing, China	9690	11715	15130	17855
0300-0400	Radio Cultural, Guatemala	3300			
0300-0400	Radio Havana, Cuba	9710	11820		
0300-0400	Radio Japan, Tokyo	5960	17765	17810	17825
0300-0400	Radio Moscow N. American Service	6000	6045	7115	7150
		7310	9685	9700	12050
		15425	17700		
0300-0400	Radio Moscow World Service, USSR	7135	9815	11710	11765
		11800	11995	13715	15140
		15170	15295	15420	17570
		17590	17610	17655	17675
		17775	17825	17855	17890
		21635	21690	21790	
0300-0400	Radio New Zealand, Wellington	15485	17705		
0300-0400	Radio Oranje, South Africa	3215			
0300-0400	RAE, Buenos Aires, Argentina	11710			
0300-0400	Trans World Radio, Bonaire	9535	11930		
0300-0400	Voice of America-Africa Service	6035	7280	9525	9575
		11835			
0300-0400	Voice of Free China, Taiwan	5950	7445	9680	9765
		11745	15345		
0300-0400	WHRI, Noblesville, Indiana	7315	9495		
0300-0400	WRNO Worldwide, Louisiana	7355			
0300-0400	IRR WWCR, Nashville, Tennessee	7520			
0300-0400	WYFR, Oakland, California	5985	9505	15566	
0310-0325	Vatican Radio, Vatican City	11725			
0310-0327	Red Cross Bcating, Switzerland	6135	9725	9885	12035
	Tuesday and Friday after last Sunday of the month.				
0315-0330	BBC World Service, London, England	3255	5975	6005	6050
		6175	6190	6195	7135
		7325	9410	9600	9670
		9915	11750	11760	11845
		11955	12095	15220	15260

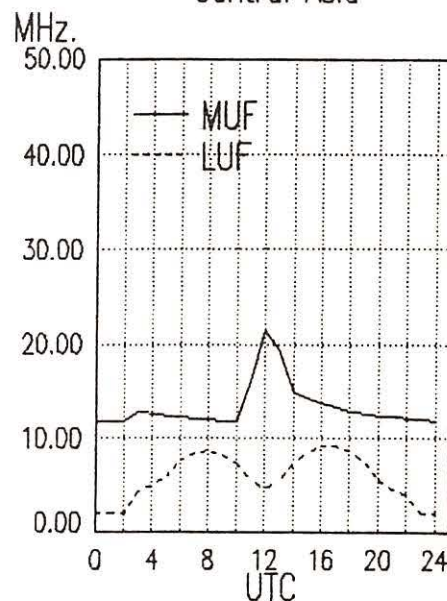
East Coast To
East Africa



East Coast To
South Africa



East Coast To
Central Asia



frequency

section

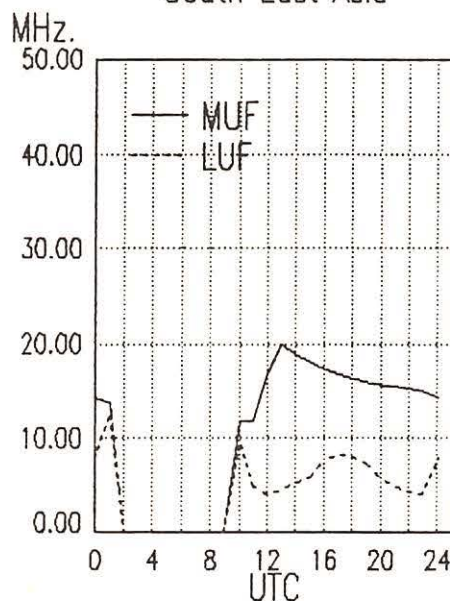
0315-0345	Radio France International, Paris	15310	17705		
		3965	6045	7135	7175
		7280	9550	9745	9790
		9800	11705	11995	
0330-0400	BBC Alternative Programming, London	3255	6005	6190	9600
		11730	11845	15420	
0330-0400	BBC World Service, London, England	5975	6175	6195	9410
		9670	9915	11760	11955
		12095	15310		
0330-0400	Radio Berlin Int'l, East Germany	9730	13610	15240	
0330-0400 A.S.	Radio Canada International, Montreal	9645			
0330-0400	Radio Netherlands Int'l, Hilversum	9590	11720		
0330-0400	Radio Tirana, Albania	9760			
0330-0400	United Arab Emirate Radio,	11940	15400	15435	17890
0330-0340	All India Radio, New Delhi	3905	4860	9610	11830
		11870	11890	15305	
0340-0350	M-A Voice of Greece, Athens	7430	9395	9420	
0350-0400	RAI, Rome, Italy	11905	15330	17795	
0352-0357v	Radio Yerevan, Armenian SSR	9610	9765	11675	15180
		17665			

0400 UTC [11:00 PM EST/8:00 PM PST]

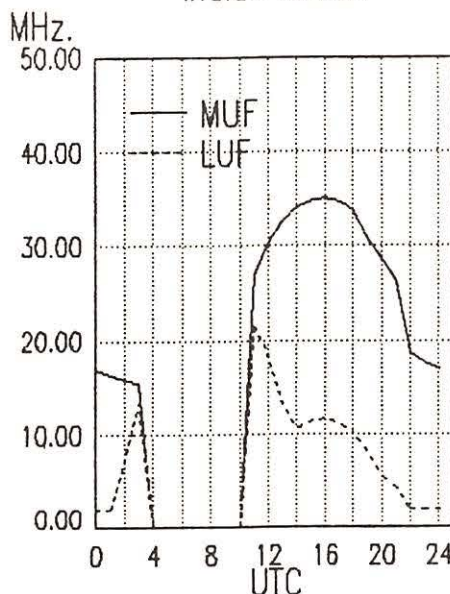
0400-0410	M-F Radio Zambia, Lusaka	4910			
0400-0410	RAI, Rome, Italy	11905	15330	17795	
0400-0415	Radio Berlin Int'l, East Germany	9730	13610	15240	
0400-0425	Radio Cultural, Guatemala	3300			
0400-0425	Radio Netherlands Int'l, Hilversum	9590	11720		
0400-0430	BBC World Service, London, England	3255	3955	5975	6005
		6175	6180	6190	6195
		7105	9410	9600	9610
		9670	9915	11760	11955
		12095	15070	15245	15280
		15310	15420	17885	21715
		5990	9510	9570	11830
0400-0430	Radio Bucharest, Romania	11940	15380		
0400-0430	Radio Canada International, Montreal	11790			
0400-0430	Radio Moscow N. American Service	9825	9895	11790	12050
		15180			
0400-0430	Swiss Radio International, Berne	6135	9725	9885	12035
0400-0430	Trans World Radio, Bonaire	9535	11930		
0400-0430	Voice of America-Africa Service	6035	7280	9525	9575
		11835			
0400-0445	Radio Berlin Int'l, East Germany	11785	15125		

0400-0450	Deutsche Welle, Köln, West Germany	7225	7150	9765	9565
		11765			
0400-0455	Radio Beijing, China	11695			
0400-0500	CBN, St. John's, Newfoundland, Can	6160			
0400-0500	CBU, Vancouver, British Columbia	6160			
0400-0500	CFCF, Montreal, Quebec, Canada	6005			
0400-0500	CFCN, Calgary, Alberta, Canada	6030			
0400-0500	CHNS, Halifax, Nova Scotia, Canada	6130			
0400-0500	Christian Science World Svc, Boston	9455	9840	13760	
0400-0500	CKWX, Vancouver, British Columbia	6080			
0400-0500	CFRB, Toronto, Ontario, Canada	6070			
0400-0500	HCJB, Quito, Ecuador	11775	15155		
0400-0500	KUSW, Salt Lake City, Utah	9815			
0400-0500	Radio 5, Johannesburg, South Africa	4880			
0400-0500	Radio Australia, Melbourne	11910	11945	15160	15240
		15320	17715	17795	
		11685	11840	15195	
0400-0500	Radio Beijing, China	5965	9710	11760	11820
0400-0500	Radio Havana Cuba	6000	7135	7150	7310
0400-0500	Radio Moscow World Service, USSR	7150	7390	9530	9765
		9795	11765	11955	11995
		12055	15140	15170	15295
		15420	15455	15480	17570
		17590	17600	17610	17625
		17655	17676	17775	17825
		17855	21635	21680	21690
		21790			
0400-0500	Radio New Zealand, Wellington	15485	17705		
0400-0500	Radio Oranje, South Africa	3215			
0400-0500	Radio Sofia, Bulgaria	7115	9700	11735	
0400-0500	Radio Tonga, Kingdom of Tonga	5025			
0400-0500	Voice of America-Middle East Service	3980	5995	6040	6140
		7170	7200	11785	15205
0400-0500 TP	Voice of Hope via KFBS, Guam	15225			
0400-0500	Voice of Turkey, Ankara, Turkey	9445	17760		
0400-0500	WHRI, Noblesville, Indiana	7315	9495		
0400-0500	WRNO Worldwide, Louisiana	6185			
0400-0500	WVCR, Nashville, Tennessee	7520			
0400-0500	WYFR, Oakland, California	5985	9505		
0425-0440	RAI, Rome, Italy	5990	7275		
0430-0455	Radio Netherlands Int'l, Hilversum	9895	13700		
0430-0500	BBC Alternative Programming, London	6005	6190	9600	11940
		15420			
0430-0500	BBC World Service, London, England	3955	5975	6180	6195
		9410	11760	12095	15070

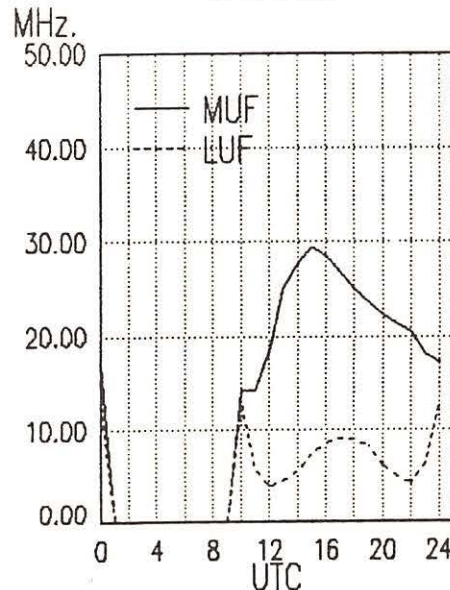
East Coast To
South East Asia



East Coast To
Indian Ocean



East Coast To
Indonesia



East Coast

frequency

section

0430-0500	Radio Moscow N. American Service	15245	15280	15310	21715
		7230	9505	9825	9895
		11790	12050	15180	
0430-0500	Radio for Peace, Costa Rica	7375	13660	21565	25945
0430-0500	Radio Tirana, Albania	9480	11835		
0430-0500	S,M Trans World Radio, Bonaire	9535	11930		
0430-0500	Voice of America-Africa Service	6035	7280	9525	9575
0445-0500	Radio Berlin Int'l, East Germany	11785	15125		
0455-0500	Voice of Nigeria, Lagos	7255			

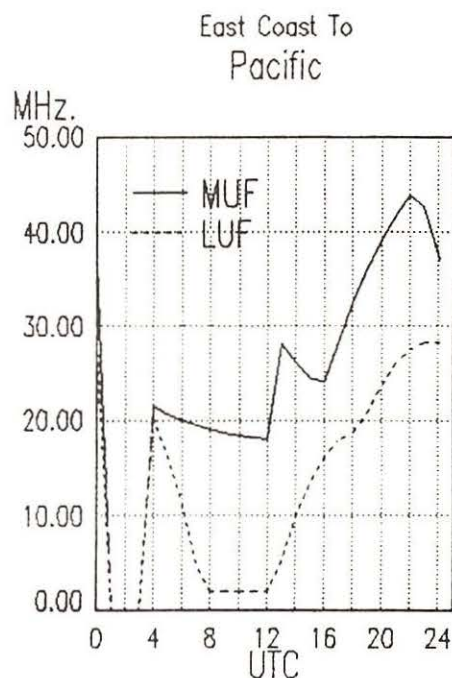
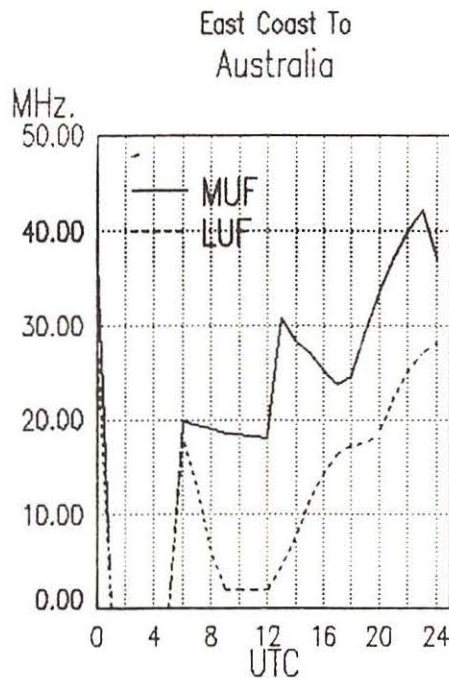
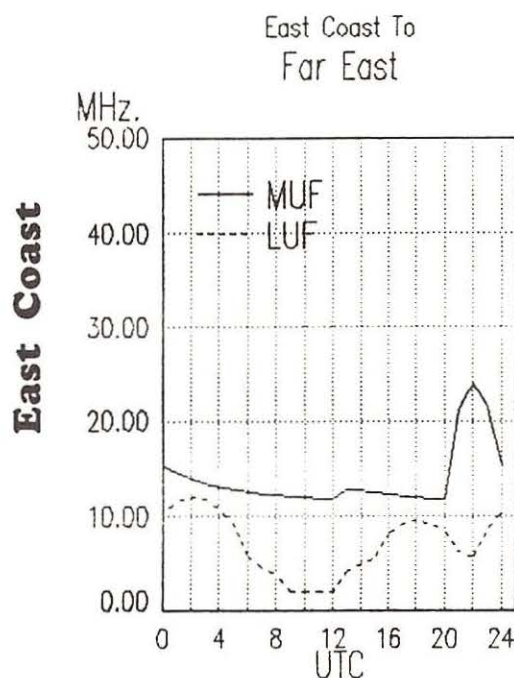
0500 UTC [12:00 AM EST/9:00 PM PST]

0500-0505	Radio Oranje, South Africa	3215			
0500-0515	Kol Israel, Jerusalem	7460	9435	11588	11605
		11665	15485	17630	17685
0500-0515	Vatican Radio, Vatican City	15190	17730		
0500-0520	Radio 5, Johannesburg, South Africa	4880			
0500-0530	Radio Berlin Int'l, East Germany	11785	15125		
0500-0600	Radio Jordan, Amman	13655			
0500-0530	Radio Moscow N. American Service	7230	9505	11790	17770
0500-0530	S,M Trans World Radio, Bonaire	9535	11930		
0500-0530	Voice of America-Middle East Service	5995	6060	6140	7170
		7200	9670	9700	9740
		11925	15205		
0500-0545	BBC World Service, London, England	3955	5975	6005	6180
		6190	6195	7120	7230
		9410	9580	9600	9640
		11760	11940	12095	15070
		15245	15280	15310	15400
		15420	17885	21470	21715
0500-0550	Deutsche Welle, Köln, West Germany	5960	6120	6130	9635
		9700			
0500-0555	Radio Beijing, China	11840			
0500-0600	CBU, Vancouver, British Columbia	6160			
0500-0600	CFCF, Montreal, Quebec, Canada	6005			
0500-0600	CFCN, Calgary, Alberta, Canada	6030			
0500-0600	CHNS, Halifax, Nova Scotia, Canada	6130			
0500-0600	Christian Science World Svc, Boston	9455	9840	13760	
0500-0600	CKWX, Vancouver, British Columbia	6080			
0500-0600	CFRB, Toronto, Ontario, Canada	6070			
0500-0600	HCJB, Quito, Ecuador	6230	9745	11775	
0500-0600	KUSW, Salt Lake City, Utah	6175			
0500-0600	Radio Australia, Melbourne	11910	15160	15240	15395
		17715	17750	17795	

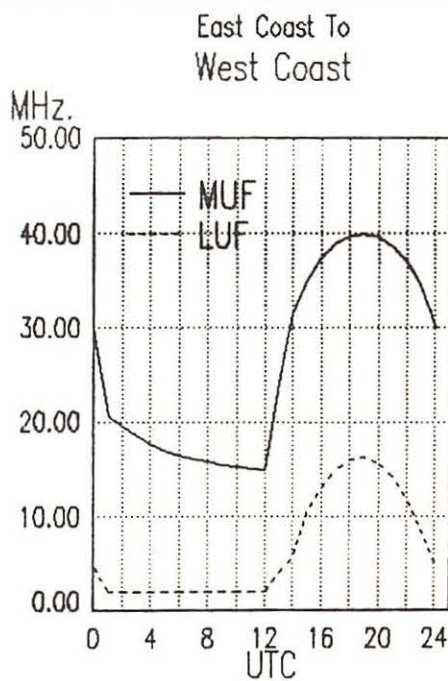
0500-0600	Radio Beijing, China	11840			
0500-0600	Radio Havana Cuba	5965	11760	11820	
0500-0600	Radio Japan, Tokyo	11870	17810	17825	17890
0500-0600	Radio Moscow World Service, USSR	7130	7135	7150	7310
		7390	9765	9795	11765
		11785	11800	11995	12055
		13715	15140	15280	15295
		15320	15420	15455	15480
		17570	17590	17600	17610
		17625	17635	17655	17665
		17675	17725	17775	17825
		17855	17890	21450	21635
		21680	21690	21790	
0500-0600	Radio New Zealand, Wellington	15485	17705		
0500-0600	Radio Tonga, Kingdom of Tonga	5025			
0500-0600	Spanish National Radio, Madrid	9630			
0500-0600	Voice of America-Africa Service	6035	7280	9540	9575
0500-0600	Voice of America-Middle East Service	3980	5995	6040	6060
		7170	7200	11785	15205
0500-0600	Voice of Hope via KFBS, Guam	15225			
0500-0600	TP Voice of Nigeria, Lagos	7255			
0500-0600	WHRI, Noblesville, Indiana	7315	9495		
0500-0600	WRNO Worldwide, Louisiana	6185			
0500-0600	WYFR, Oakland, California	5985	11580	15566	
0510-0600	Radio Oranje, South Africa	7285			
0525-0600	Radio 5, Johannesburg, South Africa	11885			
0530-0545	BBC English by Radio, London	6050	6150	7210	9750
0530-0600	Radio Austria International, Vienna	6015	6155	13730	15410
		21490			
0530-0600	Radio Bucharest, Romania	15340	15380	17720	17745
		21665			
0530-0600	Radio Moscow N. American Service	7175	7185	7230	9505
		11790	17770		
0545-0600	BBC World Service, London, England	3955	5975	6180	6190
		6195	7120	7230	9410
		9580	9600	9640	11760
		11940	12095	15070	15245
		15280	15310	15400	15420
		17885	21470	21715	
0555-0600	Voice of Malaysia, Kuala Lumpur	6175	9750	15295	

0600 UTC [1:00 AM EST/10:00 PM PST]

0600-0615	Vatican Radio, Vatican City	6185	9645
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Section

0700 UTC [7:00 PM EST/9:00 AM PST]

frequency

section

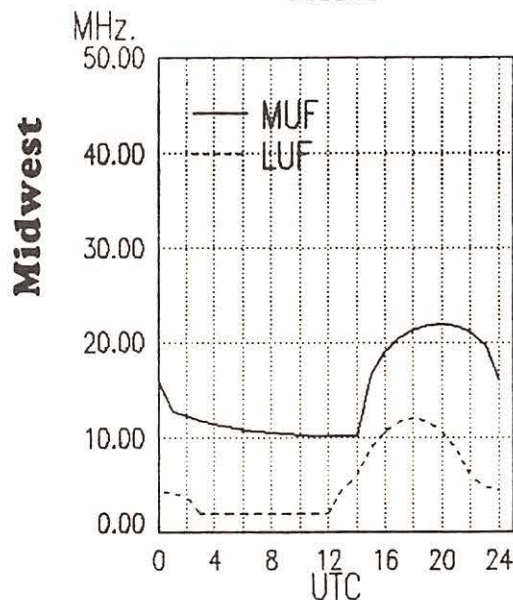
0700-0800	CKWX, Vancouver, British Columbia	6080			
0700-0800	CFRB, Toronto, Ontario, Canada	6070			
0700-0800	GBC Radio, Accra, Ghana	6130			
0700-0800	HCJB, Quito, Ecuador	9610	11835		
0700-0800	KNLS, Anchor Point, Alaska	9785			
0700-0800	KUSW, Salt Lake City, Utah	6135			
0700-0800	Radio Australia, Melbourne	5995	9655	11720	15160
		15395	17715	17750	
0700-0800	Radio Japan, Tokyo	15325	17765	17810	17890
		21690			
0700-0800	Radio Jordan, Amman	13655			
0700-0800	Radio Moscow N. American Service	7175	7185	7230	9505
		9825			
0700-0800	Radio Moscow World Service, USSR	7130	7135	7310	9450
		9515	9795	11705	11745
		11765	11800	11995	12010
		12055	13715	15140	15150
		15170	15260	15280	15295
		15320	15420	15465	15435
		15455	15465	15500	15560
		17570	17590	17600	17610
		17625	17655	17665	17675
		17700	17735	17765	17775
		17810	17825	17840	17855
		17890	21635	21680	21690
		21790			
0700-0800	Radio Tonga, Kingdom of Tonga	5025			
0700-0800	Voice of Free China, Taiwan	6130	9745	11925	
0700-0800 TP	Voice of Hope via KFBS, Guam	15225			
0700-0800	Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0700-0800 S	WRNO Worldwide, Louisiana	6185			
0710-0800	HCJB, Quito, Ecuador	6130	9745	11925	
0715-0730	BBC English by Radio, London	11860	15105		
0715-0730	Vatican Radio, Vatican City	15190	17730		
0715-0800 S	FEBA, Mahe, Seychelles	15275	17820		
0730-0745	BBC English by Radio, London	3975	6010	7210	9825
0730-0800	ABC, Alice Springs, Australia	2310	(ML)		
0730-0800	ABC, Katherine, Australia	2485			
0730-0800	ABC, Tennant Creek, Australia	2325	(ML)		
0730-0800	BBC Alternative Programming, London	9600	11860	15105	
0730-0800	BBC World Service, London, England	5975	6190	7150	7325
		9410	9640	11760	11940
		11955	12095	15070	15280
		15310	15360	15420	17640
		17710	17740	17790	21660

		21715			
0730-0800	M-F BBC World Service, London, England	6180	17885	21470	15245
0730-0755	Radio Finland, Helsinki	6120	9560	11755	
0730-0800	Radio Netherlands Int'l, Helsinki	9630	15560		
0730-0800	Swiss Radio Int'l European Service	3985	6165	9535	

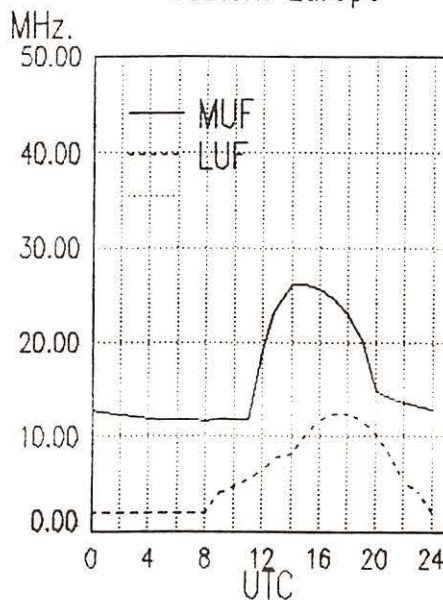
0800 UTC [3:00 AM EST/12:00 AM PST]

0800-0825	M-F BRT, Brussels, Belgium	6035	11695	21815	
0800-0825	Radio Netherlands Int'l, Helsinki	9630	15560		
0800-0825	Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0800-0830 S	Radio Norway International, Oslo	15165			
0800-0830	Voice of Islam, Dhaka, Bangladesh	15195	17855		
0800-0900	ABC, Alice Springs, Australia	2310	(ML)		
0800-0900	ABC, Katherine, Australia	2485			
0800-0900	ABC, Perth, Australia	15425			
0800-0900	ABC, Tennant Creek, Australia	2325	(ML)		
0800-0900	CBN, St. John's, Newfoundland, Can	6160			
0800-0900	CBU, Vancouver, British Columbia	6160			
0800-0900	CFCF, Montreal, Quebec, Canada	6005			
0800-0900	CFCN, Calgary, Alberta, Canada	6030			
0800-0900	CHNS, Halifax, Nova Scotia, Canada	6130			
0800-0900	Christian Science World Svc, Boston	9455	17855		
0800-0900	CKWX, Vancouver, British Columbia	6080			
0800-0900	CFRB, Toronto, Ontario, Canada	6070			
0800-0900	HCJB, Quito, Ecuador	6130			
0800-0900	HCJB, Quito, Ecuador	9745	11925		
0800-0900	KNLS, Anchor Point, Alaska	7365			
0800-0900	KTWR, Agana, Guam	15210			
0800-0900	KUSW, Salt Lake City, Utah	6135			
0800-0900	Radio Australia, Melbourne	9580	9655	11720	15395
		17715	17750		
0800-0900	Radio Jordan, Amman	13655			
0800-0900	Radio Moscow World Service, USSR	7130	7135	7310	9450
		9795	11625	11705	11745
		11765	11800	12010	12055
		15140	15150	15170	15260
		15280	15295	15320	15345
		15420	15455	15465	15500
		15530	17570	17580	17600
		17605	17610	17620	17625
		17635	17655	17665	17700
		17735	17765	17776	17810
		17840	17855	17890	21450

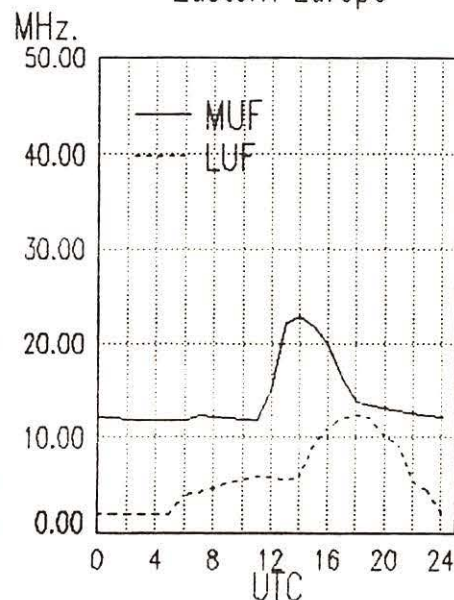
East Coast To
Alaska



Midwest To
Western Europe



Midwest To
Eastern Europe



frequency

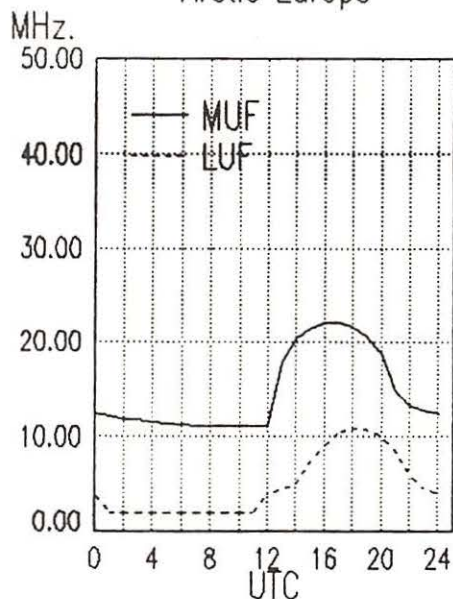
section

0800-0900	Radio New Zealand, Wellington	6100	9850	11780	0900-1000	ABC, Tennant Creek, Australia	2325 (ML)				
0800-0900	Radio Tonga, Kingdom of Tonga	5025			0900-1000	S Adventist world Radio, Portugal,	9670				
0800-0900	Voice of Indonesia, Jakarta	11744	11788		0900-1000	BBC World Service, London, England	5975	6045	6180	6190	
0800-0900	Voice of Nigeria, Lagos	7255					6195	7325	9410	9660	
0800-0900	S WRNO Worldwide, Louisiana	6185					9740	9750	9760	11750	
0830-0840	All India Radio, New Delhi	5960	5990	6010			11760	11940	12095	15070	
		6050	6065	6100			15245	15285	15310	15360	
		7110	7140	7160			15400	15420	17640	17705	
		7280	7295	9610			17790	17885	21470	21660	
		15235	15250	17705			21710	21715			
0830-0855	M-A Radio Netherlands Int'l, Hilversum	9770			0900-1000	CFCF, Montreal, Quebec, Canada	6005				
0830-0900	Radio Austria International, Vienna	6155	13730	15450	0900-1000	CFCN, Calgary, Alberta, Canada	6030				
0830-0900	Radio Beijing, China	11775	15440	17710	0900-1000	CHNS, Halifax, Nova Scotia, Canada	6130				
0830-0900	Radio Netherlands Int'l, Hilversum	17575	21485		0900-1000	Christian Science World Svc, Boston	9455	17855			
0830-0900	Swiss Radio International, Berne	9560	13685	17670	0900-1000	CKWX, Vancouver, British Columbia	6080				
0845-0900	KTWR, Agana, Guam	15210			0900-1000	CFRB, Toronto, Ontario, Canada	6070				
0845-0900	Radio Berlin Int'l, East Germany	6040	6115	7185	0900-1000	FEBC Radio Int'l, Philippines	11850				
0850-0900	All India Radio, New Delhi	5960	5990	6010	0900-1000	HCJB, Quito, Ecuador	6130				
		6050	6065	6100	0900-1000	HCJB, Quito, Ecuador	9745	11925			
		7110	7140	7150	0900-1000	KNLS, Anchor Point, Alaska	9785				
		7250	7280	7295	0900-1000	KUSW, Salt Lake City, Utah	6135				
		11850	15235	15250	0900-1000	Radio Afghanistan, Kabul	17655	21600			
					0900-1000	Radio Australia, Melbourne	9580	9655	9760	11720	
							15415				
					0900-1000	Radio Japan, Tokyo	17810				
					0900-1000	Radio Jordan, Amman	13655				
					0900-1000	Radio Metro, Johannesburg, S. Africa	11805				
					0900-1000	Radio Moscow World Service, USSR	7130	7305	9450	9780	
							9875	11800	12010	12055	
							11705	11765	12055	15140	
							15150	15260	15260	15666	
							15320	15345	15405	15435	
							15455	15460	15465	15490	
							15500	15520	15530	15560	
							15580	15595	17570	17580	
							17600	17605	17610	17625	
							17645	17655	17665	17675	
							17700	17735	17765	17775	
							17810	17840	17890	21450	
							21635	21660	21680	21690	
							21725	21800			
					0900-1000	Radio New Zealand, Wellington	6100	9850	11780		
					0900-1000	UN Radio Tanpa, Nagara, Japan	3925				
					0900-1000	Radio Tonga, Kingdom of Tonga	5025				
					0900-1000	Voice of Nigeria, Lagos	7255				

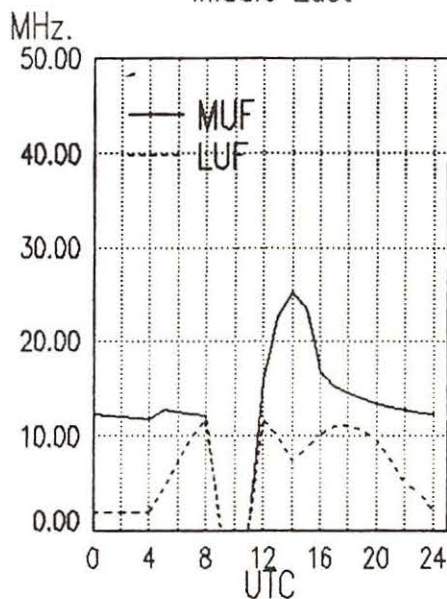
0900 UTC [4:00 AM EST/1:00 AM PST]

0900-0910	All India Radio, New Delhi	5960	5990	6010	6020
		6050	6065	6100	6140
		7110	7140	7150	7160
		7250	7280	7295	9610
		11850	15235	15250	17705
0900-0920	ABC, Perth, Australia	15425			
0900-0925	BRT, Brussels, Belgium	9925			
0900-0925	Radio Finland, Helsinki	17800	21550		
0900-0925	Radio Netherlands Int'l, Hilversum	17575	21485		
0900-0930	KTWR, Agana, Guam	15210			
0900-0930	Radio Beijing, China	11775	15440	17710	
0900-0930	S Radio Norway International, Oslo	17740			
0900-0950	Deutsche Welle, Koln, West Germany	6160	9650	11785	11945
		17780	17800	21600	21650
		21680			
0900-1000	ABC, Alice Springs, Australia	2310 (ML)			
0900-1000	ABC, Katherine, Australia	2485			

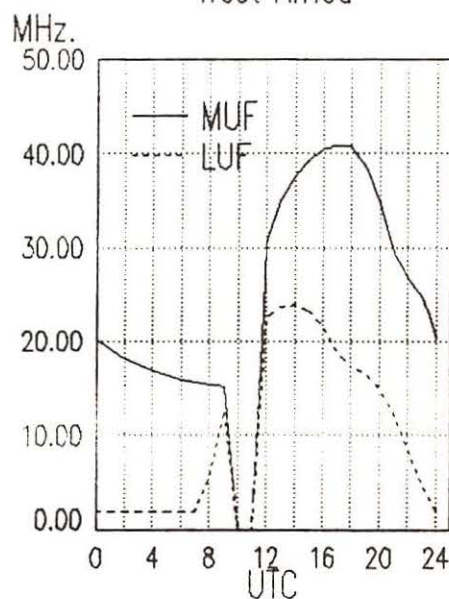
Midwest To
Arctic Europe



Midwest To
Middle East



Midwest To
West Africa



Midwest

frequency

section

0900-1000	WHRI, Noblesville, Indiana	7355	9495
0900-1000	S WRNO Worldwide, Louisiana	6185	
0920-1000	ABC, Perth, Australia	6140	
0930-0935	All India Radio, New Delhi	5960	5990 6010 6020
		6050 6065	6100 6140
		7110 7140	7160 7250
		7280 7295	9610 11850
		15235 15250	17705
0930-0955	Radio Finland, Helsinki	15245	17800
0930-0955	RRRI Surabaya, Jawa Timur, Indonesia	2377	
0930-1000	BBC English by Radio, London	7180	11955 15280 17830
0930-1000	CBN, St. John's, New Foundland	6160	
0930-1000	KTWR, Agana, Guam	11805	
0930-1000	Radio Beijing, China	11775	15440 17710

1000 UTC [5:00 AM EST/2:00 AM PST]

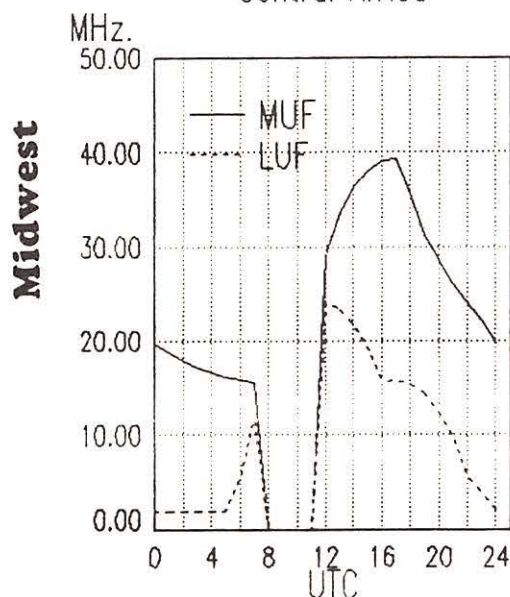
1000-1015	KTWR, Agana, Guam	11805	
1000-1015	Radio Budapest, Hungary	6110	9585 9835 11925
		15160 15220	
1000-1025	M-F BRT, Brussels, Belgium	21810	26050
1000-1030	Radio Afghanistan, Kabul	17655	21600
1000-1030	Radio Beijing, China	11775	15440 17710
1000-1030	Swiss Radio International, Berne	9560	13685 17670 21695
1000-1045	Radio Berlin Int'l, East Germany	11890	
1000-1100	ABC, Alice Springs, Australia	2310	(ML)
1000-1100	ABC, Katherine, Australia	2485	
1000-1100	ABC, Perth, Australia	9610	
1000-1100	ABC, Tennant Creek, Australia	2325	(ML)
1000-1100	Adventist World Radio-Asia, Guam	13720	
1000-1100	All India Radio, New Delhi	11860	11915 15050 15335
		17665 21735	
1000-1100	BBC World Service, London, England	5975	6045 6180 6190
		6195 7325	9410 9660
		9740 9750	9760 11750
		11760 11940	12095 15070
		15285 15310	15360 15400
		15420 17640	17705 17790
		17885 21470	21660 21710
1000-1100	CBN, St. John's, Newfoundland, Can	6160	
1000-1100	CFCF, Montreal, Quebec, Canada	6005	
1000-1100	CFCN, Calgary, Alberta, Canada	6030	
1000-1100	CHNS, Halifax, Nova Scotia, Canada	6130	
1000-1100	Christian Science World Svc, Boston	9455	9495

1000-1100	CKWX, Vancouver, British Colombia	6080	
1000-1100	CFRB, Toronto, Ontario, Canada	6070	
1000-1100	FEBC Radio Int'l, Philippines	11850	
1000-1100	HCJB, Quito, Ecuador	9745	11925
1000-1100	KTWR, Agana, Guam	11805	
1000-1100	KUSW, Salt Lake City, Utah	6135	
1000-1100	Radio Australia, Melbourne	9580	9655 15415
1000-1100	Radio Jordan, Guam	13655	
1000-1100	Radio Metro, Johannesburg, S. Africa	11805	
1000-1100	Radio Moscow World Service, USSR	7130	7300 9780 9875
		11705 11765	11800 12055
		15140 15150	15260 15280
		15320 15405	15435 15460
		15465 15500	15520 15530
		15590 17565	17570 17605
		17610 17625	17645 17665
		17700 17735	17765 17810
		17820 17840	17890 21660
		21680 21725	21800
1000-1100	Radio New Zealand, Wellington	6100	9850 11780
1000-1100	Voice of America-Caribbean Service	9590	11915
1000-1100	Voice of America-Pacific Service	5985	11720 15425
1000-1100	Voice of Nigeria, Lagos	7255	
1000-1100	S WRNO Worldwide, Louisiana	6185	
1030-1045	Radio Budapest, Hungary	6110	9585 9835 11925
		15160 15220	
1030-1100	Adventist World Radio, Forli, Italy	7230	
1030-1100	Radio Netherlands Int'l, Hilversum	6020	9505
1045-1100	Radio Berlin Int'l, East Germany	6115	
1045-1000	Radio Budapest, Hungary	7220	9585 9835 11910
		11925 15160	15220

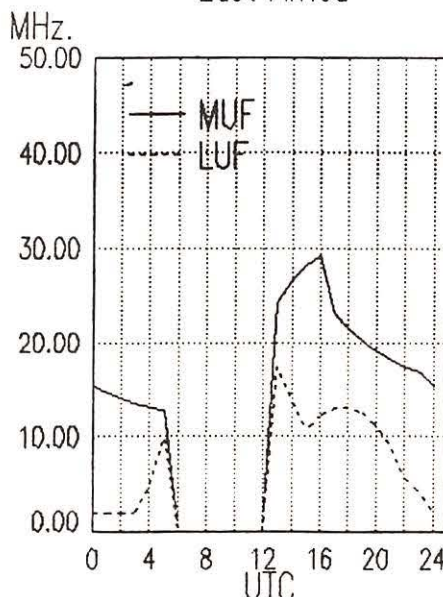
1100 UTC [6:00 AM EST/3:00 AM PST]

1100-1105	Radio New Zealand, Wellington	6100	9850 11780
1100-1115	BBC World Service, London, England	5965	5975 6045 6180
		6190 6195	7325 9410
		9660 9740	9750 9760
		11750 11760	11775 11940
		12095 15070	15140 15310
		15420 17640	17705 17790
		17885 21470	21660
		15285 15360	15400
1100-1125	Radio Netherlands Int'l, Hilversum	6020	9505

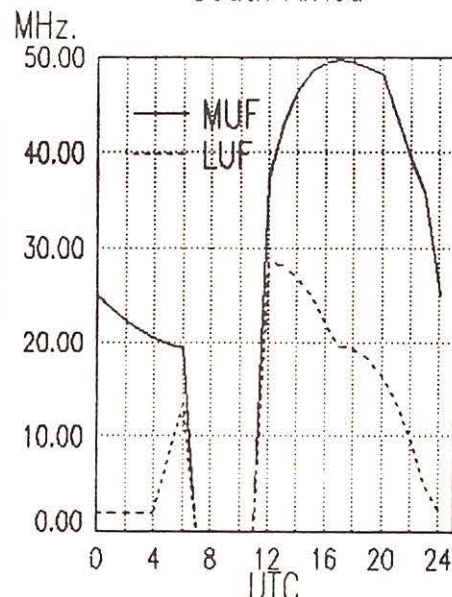
Midwest To
Central Africa



Midwest To
East Africa



Midwest To
South Africa



frequency

section

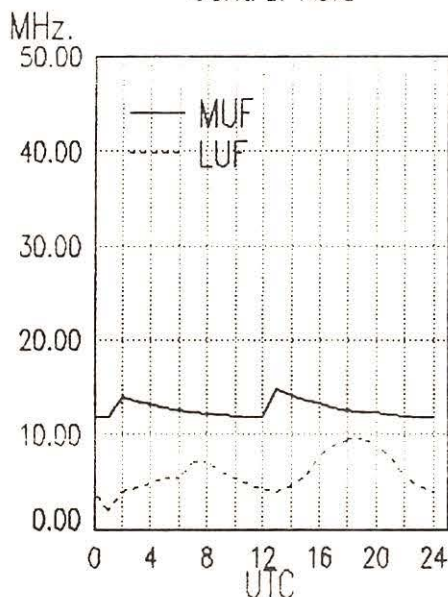
1100-1130	Adventist World Radio, Forli, Italy	7230			
1100-1130	Kol Israel, Jerusalem	11585	15485	15650	17575
		17590	17685		
1100-1130	Radio Berlin Int'l, East Germany	6115			
1100-1130	Swiss Radio International, Berne	13635	15570	17830	21770
1100-1150	Deutsche Welle, Koin, West Germany	15410	17765	17800	21600
1100-1155	Radio Beijing, China	9665			
1100-1200	ABC, Alice Springs, Australia	2310	(ML)		
1100-1200	ABC, Brisbane, Australia	9660			
1100-1200	ABC, Katherine, Australia	2485			
1100-1200	ABC, Perth, Australia	9610			
1100-1200	ABC, Tennant Creek, Australia	2325	(ML)		
1100-1200	CBN, St. John's, Newfoundland, Can	6160			
1100-1200	CFCF, Montreal, Quebec, Canada	6005			
1100-1200	CFCN, Calgary, Alberta, Canada	6030			
1100-1200	CHNS, Halifax, Nova Scotia, Canada	6130			
1100-1200	Christian Science World Svc, Boston	9455	9495		
1100-1200	CKWX, Vancouver, British Columbia	6080			
1100-1200	CFRB, Toronto, Ontario, Canada	6070			
1100-1200	KUSW, Salt Lake City, Utah	9850			
1100-1200	Radio Australia, Melbourne	5995	6060	6080	7215
		9580	9645	9710	9770
		11705	11800		
1100-1200	Radio Beijing, China	17855			
1100-1200	Radio Japan, Tokyo	6120	11815	11840	
1100-1200	Radio Jordan, Amman	13655			
1100-1200	Radio Moscow World Service, USSR	6000	7130	7305	9705
		9780	9875	11705	11765
		12055	15140	15150	15260
		15280	15320	15345	15460
		15465	15490	15500	15520
		15530	15560	17565	17645
		17665	17570	17605	17645
		17700	17735	17810	17840
		17890	21660	21680	21725
		21800			
1100-1200	Radio South Africa, Johannesburg	11805			
1100-1200	Voice of America-Caribbean Service	9590	11915		
1100-1200	Voice of America-East Asia Service	5985	6110	9760	11720
		15155	15425		
1100-1200	S WRNO Worldwide, Louisiana	6185			
1115-1130	BBC World Service, London, England	5965	5975	6045	6180
		6190	6195	7325	9410
		9660	9740	9750	9760

1115-1130	Vatican Radio, Vatican City	17840	21485		
1130-1140	Trans World Radio, Bonaire	9535	11930		
1130-1145	BBC English by Radio, London	17810	21490		
1130-1145	Radio Budapest, Hungary	7220	9585	9835	11910
		11925	15160	15220	
1130-1145	RRI Yogyakarta, Yogyakarta, Indonesia	5046			
1130-1200	BBC World Service, London, England	5965	5975	6045	6190
		6195	7325	9410	9660
		9740	9750	9760	11760
		11775	11940	12095	15070
		15140	15310	15420	17640
		17705	17790	17885	21470
		21660	21710	25750	
1130-1200	HCJB, Quito, Ecuador	11740	15115	17890	
1130-1200	Radio Austria International, Vienna	6155	13730	15430	21475
1130-1200	Radio Netherlands Int'l, Hilversum	5955	9715	17575	21480
		21615			
1130-1200	Voice of the Islamic Republic of Iran	7190	7230	9695	
1135-1140	All India Radio, New Delhi	6065	7110	9610	9675
		11620	11850	15320	
1145-1200	A-H BBC English by Radio, London	7180	15280		
1150-1200	M-F Radio Finland, Helsinki	15400	21550		
		17700	17720	21470	

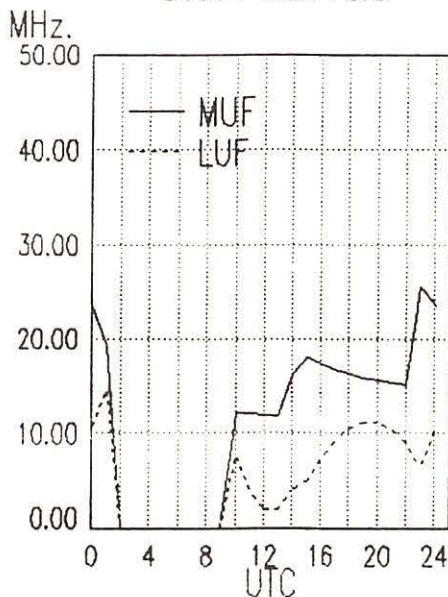
1200 UTC [7:00 AM EST/4:00 AM PST]

1200-1215	BBC English by Radio, London	6065	9680	11920	
1200-1215	M-F Radio Finland, Helsinki	15400	21550		
1200-1215	Vatican Radio, Vatican City	17840	17865	21485	21515
1200-1225	Radio Netherlands Int'l, Hilversum	5955	9715	17575	21480
		21615			
1200-1225	Voice of Islamic Republic of Iran	7190	7215	7230	9695
1200-1230	Radio East Africa,	9585			
1200-1230	S Radio Norway International, Oslo	15165			
1200-1230	Radio Tashkent, Uzbekistan, SSR	5945	7325	9540	9600
		11785	15455	15470	
1200-1245	Radio Berlin Int'l, East Germany	6115	9665	17775	
1200-1300	ABC, Alice Springs, Australia	2310	(ML)		
1200-1300	ABC, Brisbane, Australia	9660			

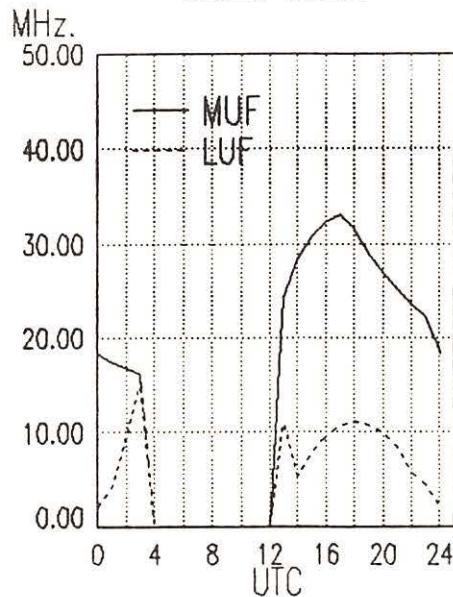
Midwest To
Central Asia



Midwest To
South East Asia



Midwest To
Indian Ocean



Midwest

frequency

section

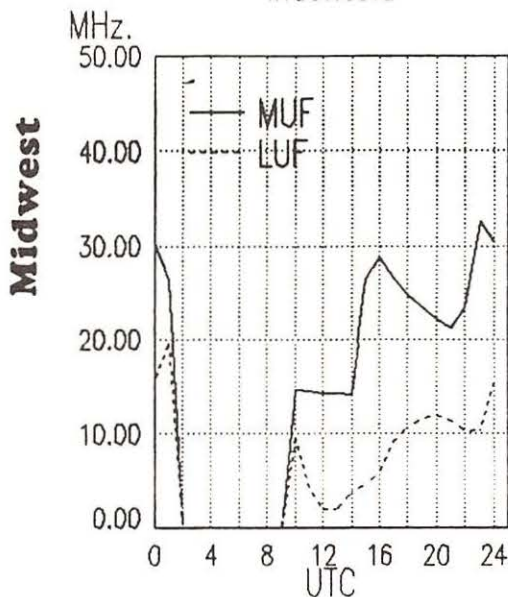
1200-1300	ABC, Katherine, Australia	2485			
1200-1300	ABC, Perth, Australia	9610			
1200-1300	ABC, Tennant Creek, Australia	2325 (ML)			
1200-1300	BBC World Service, London, England	5965	5975	6045	6190
		6195	7325	9410	9660
		9740	9750	9760	11750
		11760	11775	11940	12095
		15070	15140	15310	17640
		17705	17790	17885	21470
		21660	21710	25750	
1200-1300	CBU, Vancouver, British Colombia	6160			
1200-1300	CFCF, Montreal, Quebec, Canada	6005			
1200-1300	CFCN, Calgary, Alberta, Canada	6030			
1200-1300	CHNS, Halifax, Nova Scotia, Canada	6130			
1200-1300	Christian Science World Service	9495	9530	11930	
1200-1300	CKWX, Vancouver, British Colombia	6080			
1200-1300	CFRB, Toronto, Ontario	6070			
1200-1300	HCJB, Quito, Ecuador	11740	15115	17890	
1200-1300	KNLS, Anchor Pointe, Alaska	6095			
1200-1300	KUSW, Salt Lake City, Utah	9850			
1200-1300	Radio Australia, Melbourne	5995	6060	6080	7205
		7215	9580	9710	9770
		11800			
1200-1300	Radio Bangladesh, Dhaka	15195	17850		
1200-1300	Radio Beijing, China	11600	11660	15400	15450
		17855			
1200-1300	Radio Bucharest, Romania	15380	17720		
1200-1300	Radio Jordan, Amman	13655			
1200-1300	Radio Moscow World Service, USSR	6000	7130	7305	9705
		9765	9780	9875	11705
		11765	12055	11745	15150
		15260	15305	15320	15345
		15465	15490	15500	15520
		15530	15560	17565	17570
		17605	17625	17645	17665
		17700	17735	17810	17820
		17840	17860	21660	21680
		21725	21800		
1200-1300	Radio South Africa, Johannesburg	11805			
1200-1300	Voice of America-East Asia Service	6110	9760	11715	15155
		15425			
1200-1300	S WRNO Worldwide, Louisiana	9715			
1215-1230	S BBC English by Radio, London	6125			
1230-1235					

1230-1300	BBC English by Radio, London	6125	9560	9600	9635
		11710	11780	11845	12040
		15115	15390	15435	17695
		17880	17795	21695	
1200-1300	Radio Bangladesh, Dhaka	15195	17853v		
1230-1300	Radio Berlin Int'l, East Germany	15440	17880	21465	21540
1230-1300	Radio France International, Paris	9805	11670	15155	15195
		17650	21635	21645	
1230-1300	Radio Sweden, Stockholm	15190	21570	17740	

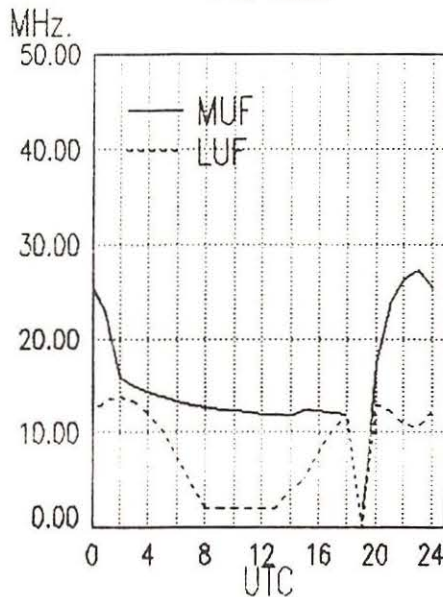
1300 UTC [8:00 AM EST/5:00 AM PST]

1300-1315	Radio Berlin Int'l, East Germany	15440	17880	21465	21540
1300-1325	M-F Radio Finland, Helsinki	15400	21550		
1300-1330	S Radio Norway International, Oslo	9590			
1300-1330	Radio Yugoslavia, Belgrade	11735	15165	15325	
1300-1330	Swiss Radio Int'l European Service	3985	6165	9535	
1300-1345	BBC World Service, London, England	5965	5975	5995	6045
		6190	6195	7180	7325
		9410	9660	9740	9750
		9760	11750	11775	11940
		12095	15070	15105	15140
		15310	15420	17640	17705
		17790	17885	21470	21660
		21710	25750		
1300-1400	ABC, Alice Springs, Australia	2310			
1300-1400	ABC, Brisbane, Australia	9660			
1300-1400	ABC, Katherine, Australia	2485			
1300-1400	ABC, Perth, Australia	9610			
1300-1400	ABC, Tennant Creek, Australia	2325 (ML)			
1300-1400	CBC Northern Quebec Service, Can	9625			
1300-1400	CBN, St. John's, Newfoundland	6160			
1300-1400	CBU, Vancouver, British Colombia	6160			
1300-1400	CFCF, Montreal, Quebec, Canada	6005			
1300-1400	CFCN, Calgary, Alberta, Canada	6030			
1300-1400	CHNS, Halifax, Nova Scotia, Canada	6130			
1300-1400	Christian Science World Service	7400	9850	13760	
1300-1400	CKWX, Vancouver, British Colombia	6080			
1300-1400	CFRB, Toronto, Ontario, Canada	6070			
1300-1400	FEBC Radio Int'l, Philippines	11850			
1300-1400	HCJB, Quito, Ecuador	11740	15115	17890	
1300-1400	KUSW, Salt Lake City, Utah	9850			
1300-1400	Radio Australia, Melbourne	5995	6060	6080	7135
		7205	9580	21525	

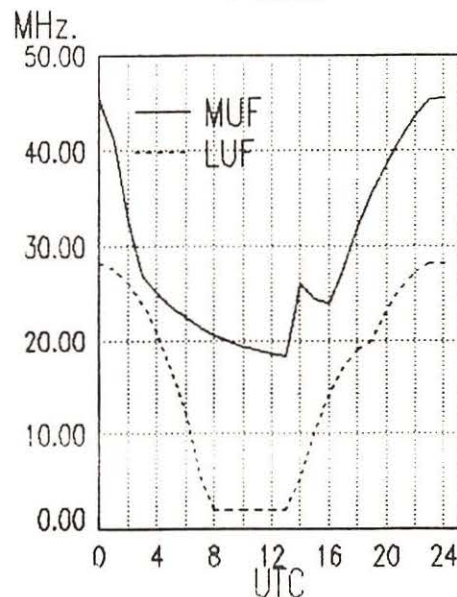
Midwest To
Indonesia



Midwest To
Far East



Midwest To
Pacific



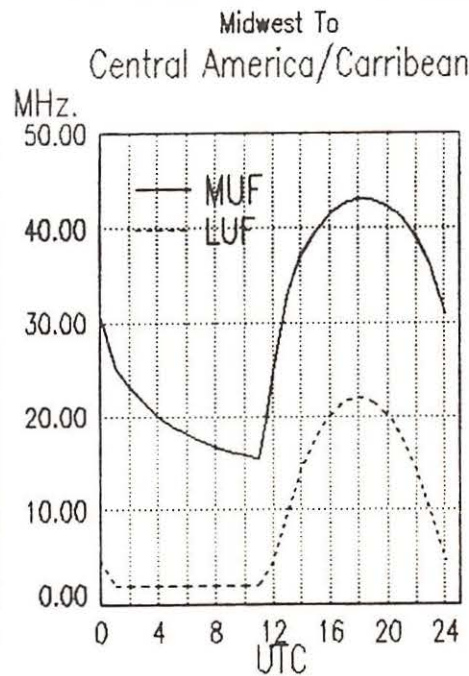
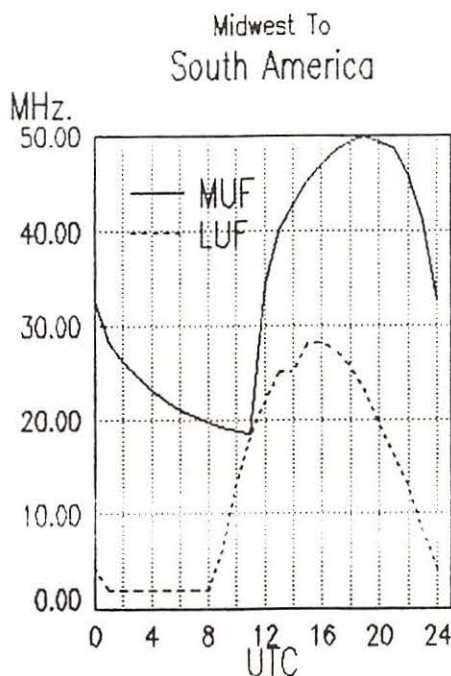
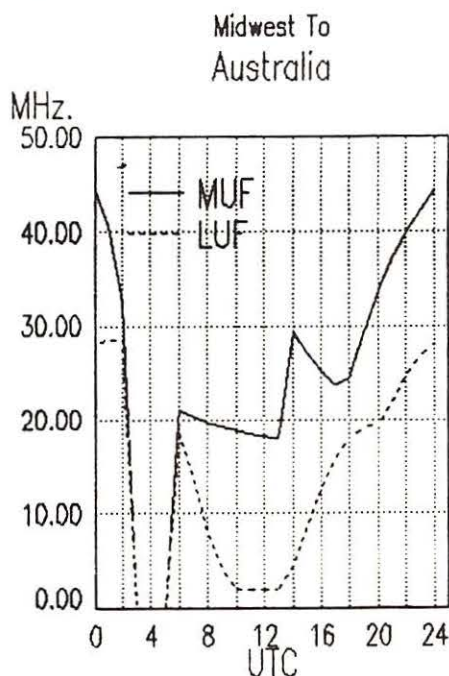
frequency

section

1300-1400	Radio Beijing, China	11600	11660	11855	15400	1400-1430	Radio Polonia, Warsaw, Poland	6095	7285
1300-1400	Radio Bucharest, Romania	11940	15365	17850		1400-1430	Radio Sweden, Stockholm	11905	17740
1300-1400	Radio Jordan, Amman	13655				1400-1445	Radio Berlin Int'l, East Germany	6115	
1300-1400	Radio Moscow World Service, USSR	7130	7305	9705	9765	1400-1455	Radio Beijing, China	7405	
		11705	11745	11765	11840	1400-1500	ABC, Katherine, Australia	2485	
		15150	15305	15320	15345	1400-1500	ABC, Perth, Australia	9610	
		15560	17625	17645	17665	1400-1500	BBC World Service, London, England	5975	6045 6190 6195
		17700	17735	17810	17820			7325	9410 9660 9740
		17840	21660	21680	21725			9750	9760 11750 11940
1300-1400	Radio South Africa, Johannesburg	11805						12095	15070 15140 15310
1300-1400	Voice of America-East Asia Service	6110	9760	11715	15155			17640	17705 17790 17880
		15425						21470	21660 21710 25750
1300-1400	S WRNO Worldwide, Louisiana	9715				1400-1500	CBC Northern Quebec Service, Can	9625	
1300-1400	WWCR, Nashville, Tennessee	15690				1400-1500	CBN, St. John's, Newfoundland	6160	
1300-1400	WYFR, Oakland, California	5950	11580	11830	13695	1400-1500	M-ACBU, Vancouver, British Columbia	6160	
		15215				1400-1500	CFCF, Montreal, Quebec, Canada	6005	
1330-1355	M-F BRT, Brussels, Belgium (Asia Serv.)	21815				1400-1500	CFCN, Calgary, Alberta, Canada	6030	
1330-1355	M-S BRT, Brussels, Belgium	21810				1400-1500	CHNS, Halifax, Nova Scotia, Canada	6130	
1330-1400	All India Radio, New Delhi	10330	15335			1400-1500	Christian Science World Service	13760	17555 21780
1330-1400	Radio Austria International, Vienna	15430				1400-1500	CKWX, Vancouver, British Columbia	6080	
1330-1400	Radio Tashkent, Uzbekistan, SSR	5945	7325	9540	9600	1400-1500	CFRB, Toronto, Ontario	6070	
		11785	15455	15470		1400-1500	FEBC Radio Int'l, Philippines	11850	
1330-1400	Swiss Radio International, Berne	9620	11695	13635	15570	1400-1500	HCJB, Quito, Ecuador	11740	15115 17890
		17830	21695			1400-1500	KUSW, Salt Lake City, Utah	9850	
1330-1400	Voice of Turkey, Ankara, Turkey	17785				1400-1500	Radio Australia, Melbourne	5995	6035 6060 6080
1330-1400	Voice of Vietnam, Hanoi	9840	15010					7135	7205 9580
1345-1400	BBC World Service, London, England	5975	5995	6045	6190	1400-1500	Radio Beijing, China	11765	11855 15165
		6195	7180	7325	9410	1400-1500	Radio Japan, Tokyo	9505	11815
		9660	9740	9750	9760	1400-1500	Radio Moscow World Service, USSR	5980	7105 7170 7315
		11750	11940	12095	15070			7260	7345 9705 9755
		15140	15310	15420	17640			9795	9895 11705 11745
		17705	17790	17885	21470			11765	11850 15305 15320
		21660	21710	25750				15345	15465 15560 17570
1345-1400	Radio Berlin Int'l, East Germany	15440	17880	21465	21540			17625	17665 17700 17735
								17810	17820 17840 17860
								21660	21680 2172
						1400-1500	Voice of America-East Asia Service	6110	9760 15155 15425
						1400-1500	Voice of America-South Asia Service	7125	9645 9760 15205
								15395	
						1400-1500	Voice of Nigeria, Lagos	7255	
						1400-1500	WHRI, Noblesville, Indiana	9465	15105
						1400-1500	S WRNO Worldwide, Louisiana	11965	
						1400-1500	WWCR, Nashville, Tennessee	15690	
						1400-1500	WYFR, Oakland, California	5950	9705 11830 13695
								17640	

1400 UTC [9:00 AM EST/6:00 AM PST]

1400-1420	Radio Jordan, Amman	13655
1400-1430	ABC, Alice Springs, Australia	2310 (ML)
1400-1430	ABC, Tennant Creek, Australia	2325 (ML)
1400-1430	BBC English by Radio, London	11860 15420 17740
1400-1430	Radio Berlin Int'l, East Germany	15440 17880 21465 21540
1400-1430	Radio France International, Paris	11925 21780
1400-1430	S Radio Norway International, Oslo	21710



Midwest

frequency

section

1405-1500	WYFR, Taiwan	11540			
1420-1500	Radio Jordan, Amman	9560			
1430-1500	F ABC, Alice Springs, Australia	2310 (ML)			
1430-1500	F ABC, Tennant Creek, Australia	2325 (ML)			
1430-1500	Radio Austria International, Vienna	6155	11780	13730	21490
1430-1500	S Radio Finland, Helsinki	21550			
1430-1500	Radio Netherlands Int'l, Hilversum	5955	13770	15150	17575
		17605			
1445-1500	Radio Berlin Int'l, East Germany	9730			
1445-1500	Vatican Radio, Vatican City	6248	7250	9645	11740

1500 UTC [10:00 AM EST/7:00 AM PST]

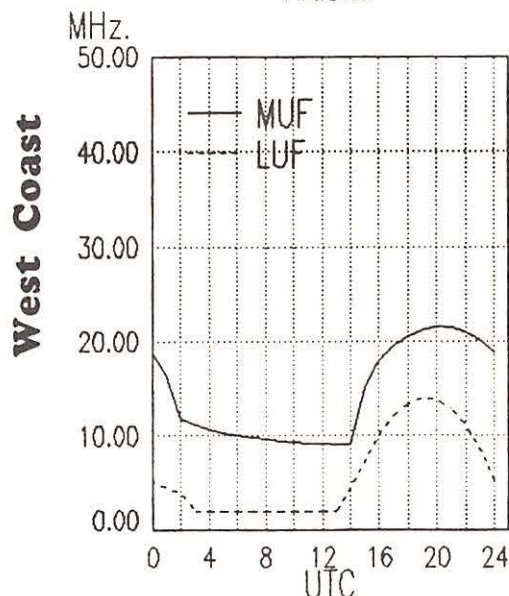
1500-1515	Vatican Radio, Vatican City	11955	15090	17870	
1500-1515	WYFR, Taiwan	11540			
1500-1525	Radio Netherlands Int'l, Hilversum	5955	13770	15150	17575
		17605			
1500-1530	Radio Berlin Int'l, East Germany	9730			
1500-1530	Radio Bucharest, Romania	11775	11940	15250	17720
		17745			
1500-1600	Radio Jordan, Amman	9560			
1500-1550	Deutsche Welle, Köln, West Germany	9735	11965	17810	21600
1500-1555	Radio Beijing, China	7405			
1500-1600	F ABC, Alice Springs, Australia	2310 (ML)			
1500-1600	ABC, Perth, Australia	9610			
1500-1600	F ABC, Tennant Creek, Australia	2325 (ML)			
1500-1600	BBC World Service, London, England	3915	5995	6180	6190
		6195	7180	7325	9410
		9740	9750	9760	11750
		11775	11940	12095	15070
		15260	15310	15400	17640
		17705	17880	21470	21660
		21710	25750		
1500-1600	CBC Northern Quebec Service, Can	9625	11720		
1500-1600	CBN, St. John's, Newfoundland	6160			
1500-1600	CBU, Vancouver, British Columbia	6160			
1500-1600	CFCF, Montreal, Quebec, Canada	6005			
1500-1600	CFCN, Calgary, Alberta, Canada	6030			
1500-1600	CHNS, Halifax, Nova Scotia, Canada	6130			
1500-1600	Christian Science World Service	13760	17555	21780	
1500-1600	CKWX, Vancouver, British Columbia	6080			
1500-1600	CFRB, Toronto, Ontario	6070			
1500-1600	FEBA, Mahe, Seychelles	11865	15325		
1500-1600	FEBC Radio Int'l, Philippines	11850			

1500-1600	HCJB, Quito, Ecuador	11740	15115	17890	
1500-1600	T-S KNLS, Anchor Point, Alaska	7355			
1500-1600	KTWR, Agana, Guam	11650			
1500-1600	KUSW, Salt Lake City, Utah	15650			
1500-1600	Radio Australia, Melbourne	5995	6035	6060	6080
		7205	7215	9580	
1500-1600	Radio Beijing, China	11765	15165		
1500-1600	M-F Radiodiffusion Nationale du Burundi	6140			
1500-1600	Radio Japan, Tokyo	9505	11815	21700	
1500-1600	Radio Moscow World Service, USSR	6165	7220	7315	9565
		9705	9755	9795	9830
		9895	11705	11745	11765
		11805	11840	11850	12015
		15305	15560	17665	17735
		17810	17840	21725	
1500-1600	Radio RSA, Johannesburg S. Africa	11925	21535	21590	25790
1500-1600	Voice of America-Middle East Service	9700	15205	15260	
1500-1600	Voice of America-South Asia Service	7125	9645	9700	9760
		15205	15260	15395	
1500-1600	Voice of Indonesia, Jakarta	11744			
1500-1600	Voice of Nigeria, Lagos	7255			
1500-1600	WHRI, Noblesville, Indiana	15105	21840		
1500-1600	S WRNO Worldwide, Louisiana	11965			
1500-1600	WWCR, Nashville, Tennessee	15690			
1500-1600	WYFR, Oakland, California	5950	11830	13695	15215
		17640			
1515-1530	KTWR, Agana, Guam	11650			
1530-1600	IRR Radio Omdurman, Sudan	9435	9540/11625		
1530-1600	Radio Sweden, Stockholm	17880	21610	21655	
1530-1600	Swiss Radio International, Berne	3985	13685	17830	21630
1545-1600	BBC English by Radio, London	9635	11945		
1545-1600	Radio Berlin Int'l, East Germany	15240	17880		
1545-1600	Vatican Radio, Vatican City	15120	17730	21650	

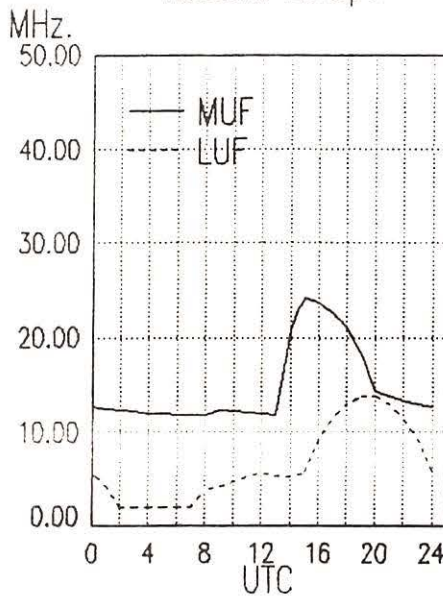
1600 UTC [11:00 AM EST/8:00 AM PST]

1600-1610	FEBA, Mahe, Seychelles	11865	15325		
1600-1700	BBC World Service, London, England	3915	5975	5995	6180
		6190	6195	7180	7325
		9410	9740	9750	9760
		11750	11775	11940	12095
		15070	15260	15310	15400
		17640	17705	17860	17880
		21470	21660	21710	

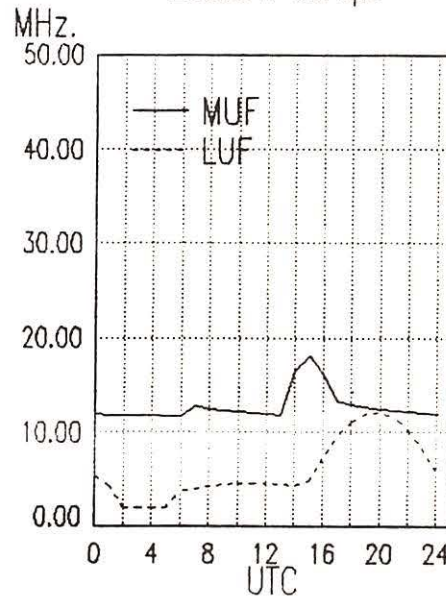
Midwest To
Alaska



West Coast To
Western Europe



West Coast To
Eastern Europe



frequency

section

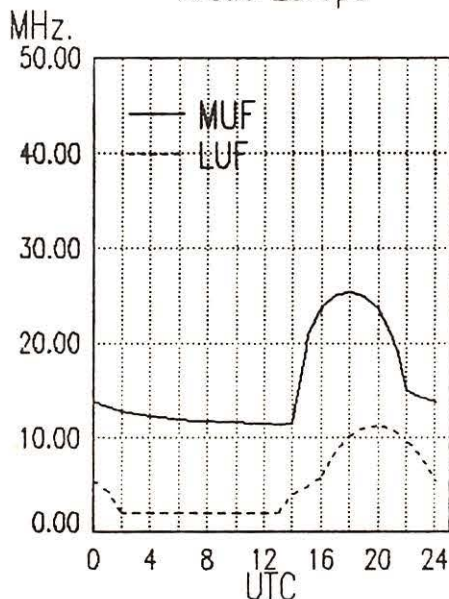
1600-1625	M-F	Radio Finland, Helsinki	15400	21550
1600-1630		Radio Berlin Int'l, East Germany	15240	17880
1600-1630	S	Radio Norway International, Oslo	17765	21705
1600-1630		Radio Polonia, Warsaw, Poland	6135	9540
1600-1630		Radio Portugal, Lisbon	15210	
1600-1630		Voice of Vietnam, Hanoi	9840	15010
1600-1700	F	ABC, Alice Springs, Australia	2310	(ML)
1600-1700		ABC, Perth, Australia	9610	
1600-1700	F	ABC, Tennant Creek, Australia	2325	(ML)
1600-1700		Adventist World Radio-Asia, Guam	11980	
1600-1700		CBC Northern Quebec Service, Can	9625	
1600-1700		CBN, St. John's, Newfoundland	6160	
1600-1700		CBU, Vancouver, British Columbia	6160	
1600-1700		CFCF, Montreal, Quebec, Canada	6005	
1600-1700		CFCN, Calgary, Alberta, Canada	6030	
1600-1700		CHNS, Halifax, Nova Scotia, Canada	6130	
1600-1700		Christian Science World Service	21640	
1600-1700		CKWX, Vancouver, British Columbia	6080	
1600-1700		CFRB, Toronto, Ontario	6070	
1600-1700		KNLS, Anchor Point, Alaska	9815	
1600-1700		KTWR, Agana, Guam	11650	11910 13720
1600-1700		KUSW, Salt Lake City, Utah	15650	
1600-1700		Radio Australia, Melbourne	5995	6035 6060 6080
			7205	7215 9580
1600-1700		Radio Beijing, China	9570	11715 15110
1600-1700	S	Radio Canada International, Montreal	9625	11720 11955 17820
1600-1700		Radio France International, Paris	6175	11705 12015 15360
			17620	17795 17850
1600-1700		Radio Jordan, Amman	9560	
1600-1700		Radio Moscow World Service, USSR	5980	6165 7105 7170
			7220	7260 7315 7345
			9510	9705 9755 9795
			9830	9885 9895 11765
			11840	17810 17840
1600-1700		Trans World Radio-Swaziland	15210	
1600-1700		Voice of America-Africa Service	7195	9575 11920 15410
			15445	15580 15600 17785
			17800	17870
1600-1700		Voice of America-Middle East Service	3980	9700 15205 15260
1600-1700		Voice of America-Asia Service	7125	9645 9700 9760
			15205	15260 15395
1600-1700		Voice of Nigeria, Lagos	7255	
1600-1700		WHRI, Noblesville, Indiana	15105	21840
1600-1700		WRNO New Orleans, Louisiana	15420	
1600-1700		WWCR, Nashville, Tennessee	15690	

1600-1700		WYFR, Oakland, California	11830	13695 15215 15566
			21525	21615 17640
1600-1650		Deutsche Welle, Koln, West Germany	6170	7175 9745 15105
			15595	17825 21680
1615-1630		BBC Africa Service, London	6005	6190 9595 11940
			15400	17880
1615-1630		BBC English by Radio, London	3975	6125 9750
1615-1630		Radio Budapest, Hungary	7220	9585 9835 11910
			11925	15160 15220
1615-1700		BBC World Service, London, England	3915	5975 6180 6195
			7325	9410 9740 11775
			12095	15070 15260 15310
			17640	17695 17860 21470
			21660	21710
1625-1645		A.S. Radio Finland, Helsinki	15400	21550
1630-1655		M-ABRT, Brussels, Belgium	17580	21810
1630-1700		Radio Netherlands Int'l, Hilversum	15375	15570
1630-1700		RAE, Buenos Aires, Argentina	11710	15345
1645-1700		Radio Berlin Int'l, East Germany	7295	9730 15340 17775
1645-1700	S	Radio Finland, Helsinki	15400	21550

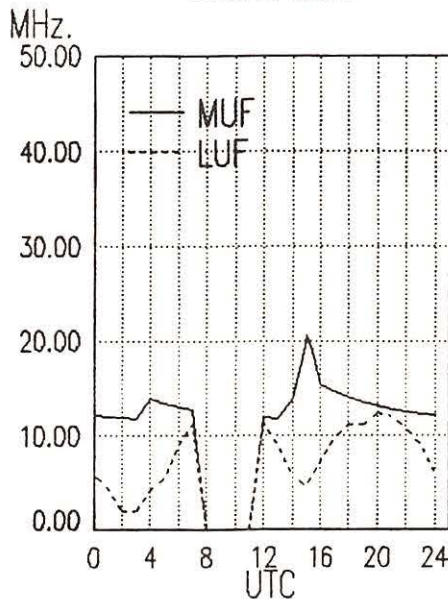
1700 UTC [12:00 PM EST/9:00 AM PST]

1700-1705		KTWR, Agana, Guam	11650	
1700-1715		BBC English by Radio, London	6065	7105 9605 11750
1700-1715		Swiss Radio Int'l Europe Service (MO)	9985	6165 9535
1700-1725		Radio Budapest, Hungary	6110	9585 9835 11910
			15160	
1700-1725		Radio Netherlands Int'l, Hilversum	15375	15570
1700-1730		BBC English by Radio, London	3975	6125 7155
1700-1730		Radio Berlin Int'l, East Germany	7295	9730 15340 17775
1700-1730	S	Radio Norway International, Oslo	21705	
1700-1730		RAE, Buenos Aires, Argentina	11710	15345
1700-1745		BBC World Service, London, England	3915	5975 6180 6195
			7160	7325 9410 9740
			11775	12095 15070 15260
			15310	17640 17695 21470
			21660	21710
1700-1800	F	ABC, Alice Springs, Australia	2310	(ML)
1700-1800		ABC, Tennant Creek, Australia	2325	(ML)
1700-1800		CBN, St. John's, Newfoundland	6160	
1700-1800		CBU, Vancouver, British Columbia	6160	
1700-1800		CFCF, Montreal, Quebec, Canada	6005	
1700-1800		CFCN, Calgary, Alberta, Canada	6030	

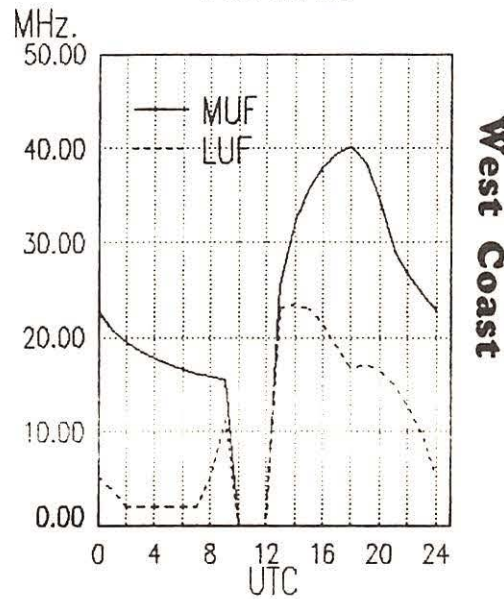
West Coast To
Arctic Europe



West Coast To
Middle East



West Coast To
West Africa



West Coast

frequency

section

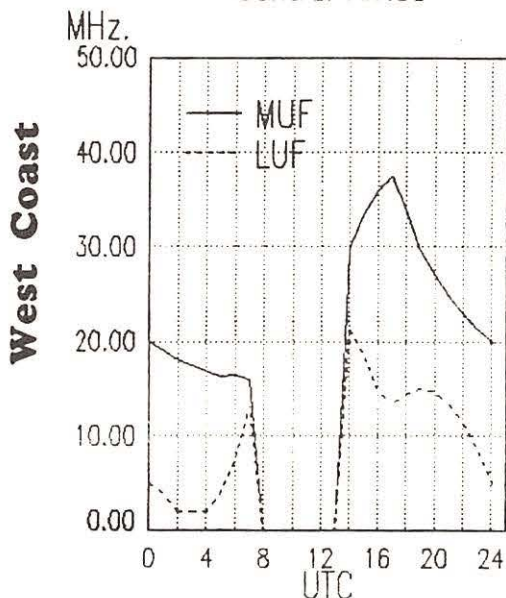
1700-1800	CHNS, Halifax, Nova Scotia, Canada	6130			
1700-1800	Christian Science World Service	21640			
1700-1800	CKWX, Vancouver, British Colombia	6080			
1700-1800	CFRB, Toronto, Ontario	6070			
1700-1800	KUSW, Salt Lake City, Utah	15650			
1700-1800	Radio Australia, Melbourne	5995	6035	6060	6080
		7205	7215	9580	
1700-1800	Radio Beijing, China	9570	11575	15165	
1700-1800	Radio Japan, Tokyo	7140	9505	9535	11815
1700-1800	Radio Jordan, Amman	9560			
1700-1800	Radio Moscow World Service, USSR	5980	7105	7170	7220
		7260	7265	7315	7345
		9510	9565	9755	9685
		9795	9875	9885	11730
		11765	11840	15405	17840
1700-1800	Voice of America-Africa Service	7195	9575	11920	15410
		15445	15580	15600	17785
		17800	17870		
1700-1800	Voice of America-Middle East Service	3980	6040	9700	9760
		11760	15205	15260	
1700-1800	Voice of America-South Asia Service	7125	9645	9700	15395
1700-1800	WHRI, Noblesville, Indiana	13760	15105		
1700-1800	WRNO, New Orleans, Louisiana	15420			
1700-1800	WWCR, Nashville, Tennessee	15690			
1700-1800	WYFR, Oakland, California	11830	17750		
1709-1730	BBC Africa Service, London, England	6005	6190	9595	11940
		15400	17880		
1730-1755	BRT, Brussels, Belgium	5910	11695		
1730-1800	Radio Austria International, Vienna	5945	6155	12010	13730
1730-1800	Radio Bucharest, Romania	15340	15365	17805	17860
1730-1800	Radio New Zealand, Wellington	11780	15485		
1745-1800	BBC World Service, London, England	5975	6180	6195	7160
		7325	9410	9740	12095
		15070	15310	17640	17695

1800 UTC [1:00 PM EST/10:00 AM PST]

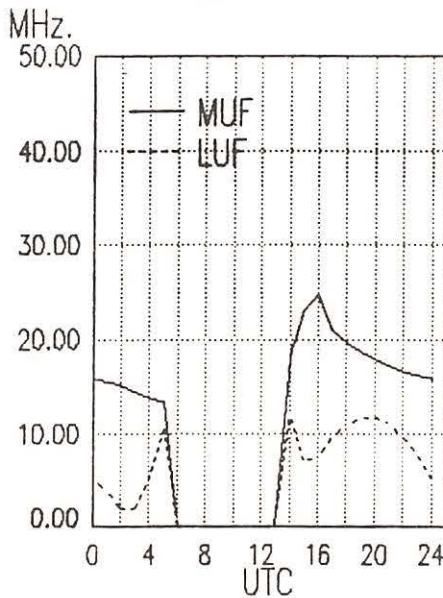
1800-1815	Kol Israel, Jerusalem	11585	11655		
1800-1830	BBC World Service, London, England	3255	3955	5975	6180
		6190	6195	7160	7325
		9410	9740	11750	12095
		15070	15310	15400	17640
		17695	17880		
1800-1830	S Radio Norway International, Oslo	15265			

1800-1830	Radio Sweden, Stockholm	6065	7265		
1800-1830	Voice of Vietnam, Hanoi	9840	15010		
1800-1845	Trans world Radio, Swaziland	15210			
1800-1850	Radio Bras, Brasilia, Brasil	15265			
1800-1900	F ABC, Alice Springs, Australia	2310	(ML)		
1800-1900	F ABC, Tennant Creek, Australia	2325	(ML)		
1800-1900	All India Radio, New Delhi	11935	15360		
1800-1900	CBN, St. John's, Newfoundland	6160			
1800-1900	CBU, Vancouver, British Colombia	6160			
1800-1900	CFCF, Montreal, Quebec, Canada	6005			
1800-1900	CFCN, Calgary, Alberta, Canada	6030			
1800-1900	CHNS, Halifax, Nova Scotia, Canada	6130			
1800-1900	Christian Science World Service	21640			
1800-1900	CKWX, Vancouver, British Colombia	6080			
1800-1900	CFRB, Toronto, Ontario	6070			
1800-1900	KNLS, Anchor Point, Alaska	7355			
1800-1900	KUSW, Salt Lake City, Utah	15650			
1800-1900	Radio Australia, Melbourne	5995	6035	6060	6080
		7205	7215	9580	
1800-1900	Radio Jordan, Amman	9560			
1800-1900	Radio Kuwait, Safat, Kuwait	11665			
1800-1900	Radio Moscow World Service, USSR	5980	7105	7170	7260
		7345	9575	9685	9755
		9795	9830	9860	9875
		11765	11840	15405	15425
		15450	17570	21740	
1800-1900	Radio New Zealand, Wellington	11780	15485		
1800-1900	Voice of America-Africa Service	7195	9575	11920	15410
		15445	15580	15600	17785
		17800	17870	21585	
1800-1900	Voice of America-Middle East Service	6040	9700	9760	11760
		15205			
1800-1900	WHRI, Noblesville, Indiana	13760	17830		
1800-1900	WRNO, New Orleans, Louisiana	15420			
1800-1900	IRR WWCR, Nashville, Tennessee	15690			
1800-1900	WYFR, Oakland, California	11830	13695	15215	17750
		17895			
1815-1900	Radio Bangladesh, Dhaka	15255	17805		
1815-1900	Radio Berlin Int'l, East Germany	7260	7295	9730	
1830-1855	BRT, Brussels, Belgium	5910	11695		
1830-1855	Radio Polonia, Warsaw, Poland	5995	6135	7125	7285
		9525	11840		
1830-1900	BBC Africa Service, London	3255	6005	6190	9630
		15400	17880		

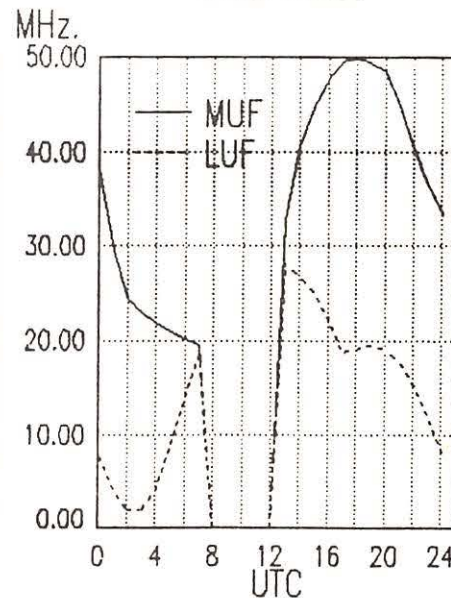
West Coast To
Central Africa



West Coast To
East Africa



West Coast To
South Africa



frequency

section

1830-1900	BBC World Service, London, England	3955	6180	6195	7325
		9410	11750	12095	15070
1830-1900	Radio Berlin Int'l, East Germany	9665	13610	15145	15340
1830-1900	Radio Netherlands Int'l, Hilversum	6020	15560	17605	21685
1830-1900	Swiss Radio International, Berne	9885	11955		
1830-1900	Swiss Radio Int'l European Service	3985	6165	9535	
1845-1855	IRR RTV Guineenne, Conakry, Guinea	4702	7125v		
1845-1900	GBC Radio, Accra, Ghana	6130			

1900 UTC [2:00 PM EST/11:00 AM PST]

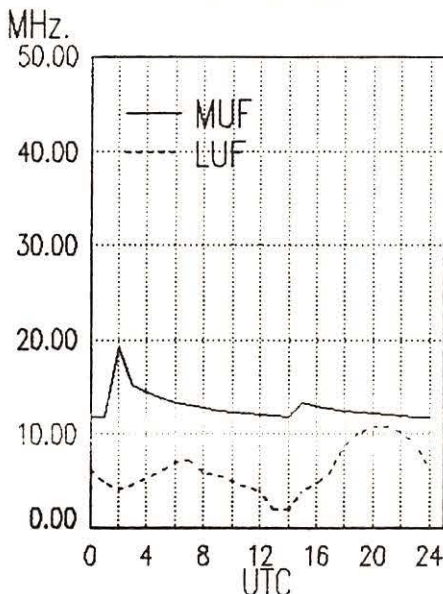
1900-1915	Radio Berlin Int'l, East Germany	9665	13610	15145	15340
1900-1925	Radio Netherlands Int'l, Hilversum	6020	15560	17605	21685
1900-1930	HCJB, Quito, Ecuador	15270	17790	21470	
1900-1930	Radio Japan, Tokyo	9505	11850	15270	
1900-1930	Radio Kiev, Ukrainian SSR	6010	6090	6165	7115
1900-1930	S Radio Norway International, Oslo	15220			
1900-1930	M-F Radio Portugal, Lisbon	11740	15250	21530	
1900-1930	Voice of Vietnam, Hanoi	9840	15010		
1900-1950	Deutsche Welle, Köln, West Germany	9745	11810	13790	15390
1900-2000	All India Radio, New Delhi	7412	11620	11935	15360
1900-2000	BBC World Service, London, England	3255	3955	6005	6180
		6190	6195	7160	7325
		9410	9630	11750	12095
		15070	15140	15400	17880
1900-2000	CBN, St. John's, Newfoundland	6160			
1900-2000	CBU, Vancouver, British Columbia	6160			
1900-2000	CFCF, Montreal, Quebec, Canada	6005			
1900-2000	CFCN, Calgary, Alberta, Canada	6030			
1900-2000	CHNS, Halifax, Nova Scotia, Canada	6130			
1900-2000	Christian Science World Service	21640			
1900-2000	CKWX, Vancouver, British Columbia	6080			
1900-2000	CFRB, Toronto, Ontario	6070			
1900-2000	GBC Radio, Accra, Ghana	6130			
1900-2000	HCJB, Quito, Ecuador	15270	17790	21470	
1900-2000	KUSW, Salt Lake City, Utah	15650			
1900-2000	Radio Algiers, Alger	9535	15215		
1900-2000	Radio Australia, Melbourne	6035	6060	6080	7205
		7215	9580		
1900-2000	Radio Beijing, China	9440	11515		
1900-2000	Radio Havana Cuba	15340			
1900-2000	Radio Jordan, Amman	9560			
1900-2000	Radio Kuwait, Safat, Kuwait	11665			

1900-2000	Radio Moscow World Service, USSR	6905	6030	7105	7170
		9575	9685	9755	9795
		9820	9830	9860	9875
		9895	11765	11840	12010
		12050	15405	15425	15450
		17570	17840		
1900-2000	Radio New Zealand, Wellington	11780	15485		
1900-2000	Spanish National Radio, Madrid	15280	15375	15395	
1900-2000	Voice of America-Africa Service	7195	15410	15445	15580
		15600	17785	17800	17870
		21485			
1900-2000	Voice of America-Middle East Service	6040	9700	9760	11760
		15205			
1900-2000	Voice of America-Pacific Service	9525	11870	15180	
1900-2000	WHRI, Noblesville, Indiana	13760	17830		
1900-2000	S-F WMLK, Bethel, Pennsylvania	9465			
1900-2000	WRNO, New Orleans, Louisiana	15420			
1900-2000	IRR WWCR, Nashville, Tennessee	15690			
1900-2000	WYFR, Oakland, California	11830	13695	15215	15566
		17895			
1930-1945	Radio Finland, Helsinki	6120	9530	11755	
1930-2000	Radio Austria International, Vienna	5945	6155	12010	13730
1930-2000	Radio Bucharest, Romania	9690	9750	11810	11940
1930-2000	Radio Budapest, Hungary	6110	7220	9585	9835
		11910	15160		
1930-2000	Radio Korea, Seoul, South Korea	15575			
1930-2000	Radio for Peace Int'l, Costa Rica	7375	13660	21565	25945
1930-2000	Radio Yugoslavia, Belgrade	5980	7215	17735	
1930-2000	Voice of the Islamic Republic Iran	11895			
1935-1955	RAI, Rome, Italy	7275	9710	11800	
1945-2000	All India Radio, New Delhi	9755	11860		

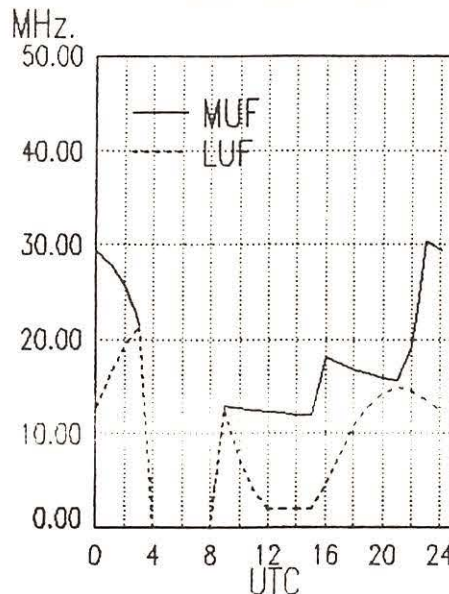
2000 UTC [3:00 PM EST/12:00 PM PST]

2000-2005	Radio New Zealand, Wellington	11780	15485		
2000-2030	BBC World Service, London, England	3255	3955	5975	6005
		6180	6190	6195	7160
		7180	7325	9410	9630
		11715	11750	12095	15070
		15140	15260	15400	17760
		17880			
2000-2030	Kol Israel, Jerusalem	9435	11605	15485	15640
		13750			
2000-2030	Radio Bucharest, Romania	9690	9750	11810	11940

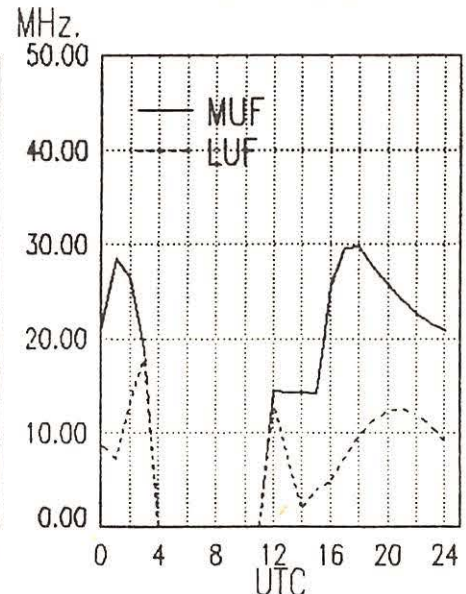
West Coast To
Central Asia



West Coast To
South East Asia



West Coast To
Indian Ocean



West Coast

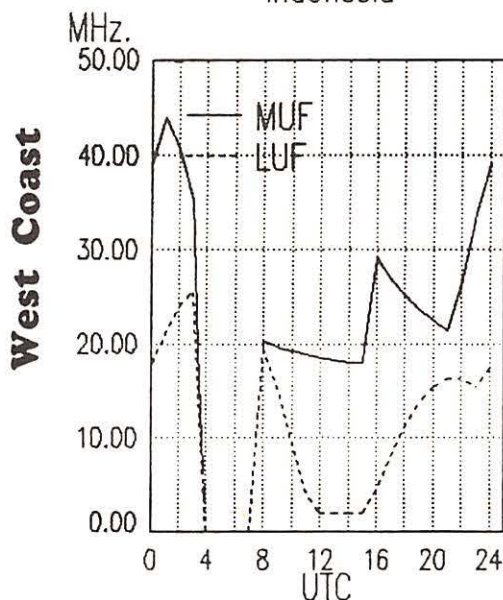
frequency section

2000-2030	Voice of the Islamic Republic Iran	11895			
2000-2030	Radio for Peace Int'l, Costa Rica	7375	13660	21565	25945
2000-2100	All India Radio, New Delhi	7412	9755	9910	11620
		11860			
2000-2100	M-AABC, Alice Springs, Australia	2310	(ML)		
2000-2100	ABC, Katherine, Australia	2485			
2000-2100	M-AABC, Tennant Creek, Australia	2325	(ML)		
2000-2100	CBN, St. John's, Newfoundland	6160			
2000-2100	CBU, Vancouver, British Columbia	6160			
2000-2100	CFCF, Montreal, Quebec, Canada	6005			
2000-2100	CFCN, Calgary, Alberta, Canada	6030			
2000-2100	CHNS, Halifax, Nova Scotia, Canada	6130			
2000-2100	Christian Science World Service	13770	15610	17555	
2000-2100	CKWX, Vancouver, British Columbia	6080			
2000-2100	CFRB, Toronto, Ontario	6070			
2000-2100	KUSW, Salt Lake City, Utah	15650			
2000-2100	KVOH, Rancho Simi, California	17775			
2000-2100	Radio Australia, Melbourne	6035	7205	7215	9580
		9620			
2000-2100	Radio Baghdad, Iraq	13660			
2000-2100	Radio Beijing, China	9440	9820	11500	11715
		15110			
2000-2100	Radio Havana Cuba	15340			
2000-2100	Radio Kuwait, Safat, Kuwait	11665			
2000-2100	Radio Jordan, Amman	9560			
2000-2100	Radio Kuwait, Safat	11665			
2000-2100	Radio Moscow World Service, USSR	5905	7290	9685	9755
		9795	9860	9895	11685
		11840	12050	15405	15425
		17570			
2000-2100	Voice of America-Africa Service	7195	15410	15445	15580
		15600	17785	17800	17870
		21485			
2000-2100	Voice of America-Middle East Service	6040	9700	9760	11760
		15205			
2000-2100	WHRI, Noblesville, Indiana	13760	17830		
2000-2100	WINB, Red Lion, Pennsylvania	15185			
2000-2100	WRNO, New Orleans, Louisiana	15420			
2000-2100	WWCR, Nashville, Tennessee	15690			
2000-2100	WYFR, Oakland, California	9455	11830	13695	15215
		17612.5	17845	21525	
2005-2100	Radio Damascus, Syria	15095	17710		
2015-2100	Radio Berlin Int'l, East Germany	9665	13610	15340	
2025-2045	RAI, Rome, Italy	7235	9575	11800	
2030-2100	BBC World Service, London, England	3955	5975	6005	6180
		6195	7180	7325	9410
		11715	11750	12095	15070
		15140	15260	15400	17760
		17880			
2030-2100	Radio Africa ?	7190			
2030-2100	Radio Netherlands Int'l, Hilversum	9860	13700	15560	
2030-2100	M Radio Tallin, Estonian SSR	5925			
2030-2100	Voice of Vietnam, Hanoi	9840	15010		
2045-2100	All India Radio, New Delhi	7412	9550	9910	11620
		11715			
2045-2100	IBRA Radio, Malta	7110	7225		
2045-2100	Radio Berlin Int'l, East Germany	6115			
2045-2100	Vatican Radio, Vatican City	9625	11700	11760	15120
2050-2100	Vatican Radio, Vatican City	6190	7250	9645	

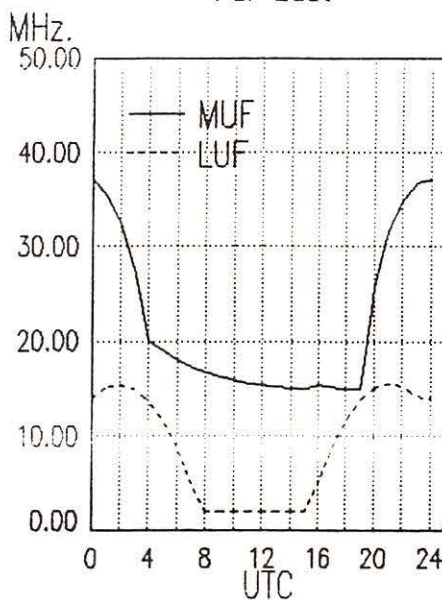
2100 UTC [4:00 PM EST/1:00 PM PST]

2100-2105	Radio Damascus, Syria	15095	17710		
2100-2110	Vatican Radio, Vatican City	6190	7250	9645	
2100-2115	BBC World Service, London, England	3955	5975	6005	6180
		6195	7325	9410	11750
		12095	15070	15140	15260
		15400	17715	17760	17880
2100-2115	IBRA Radio, Malta	7225			
2100-2125	Radio Netherlands Int'l, Hilversum	9860	13700	15560	
2100-2130	Radio Bucharest, Romania	9690	9750	11940	15250
2100-2130	Radio Budapest, Hungary	6110	7220	9585	9835
		11910	15160		
2100-2130	Radio Japan, Tokyo	7140	11815	11835	15230
		15270	17890		
2100-2130	Radio Korea, Seoul, South Korea	15575			
2100-2130	Radio Peace & Progress, USSR	4795	5905	6145	7140
		7215	7340	7360	7420
		7440			
2115-2130	BBC World Service, London, England	3955	6005	6195	7180
		7325	9410	11715	11750
		12095	15140	15260	
2130-2200	BBC World Service, London, England	3955	5975	6005	6195
		7325	9410	11750	12095
		15140	15260		
2145-2130	Radio Berlin Int'l, East Germany	6115			
2100-2130	Radio Berlin Int'l, East Germany	9665	13610	15340	
2100-2130	M Radio Ljubljana, Yugoslavia	5980	7240	9620	

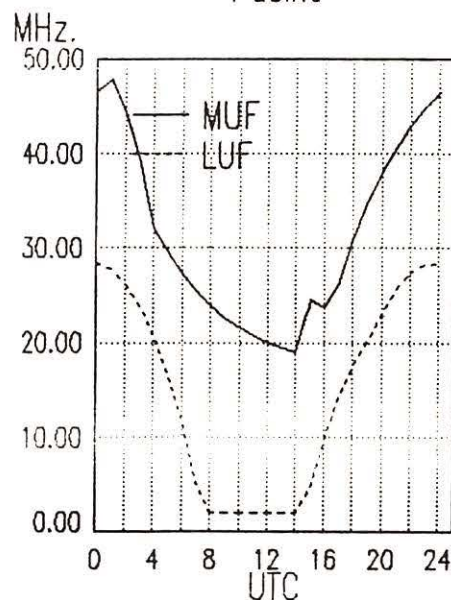
West Coast To
Indonesia



West Coast To
Far East



West Coast To
Pacific



frequency

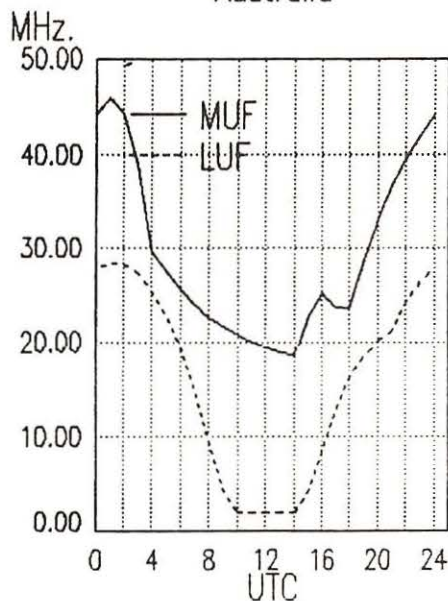
section

2100-2130	Radio Sweden, Stockholm	9655	11705	
2100-2130	Swiss Radio International, Berne	9885	13635	15525 21705
2100-2150	Deutsche Welle, Koln, West Germany	7130	9765	
2100-2200	CBN, St. John's, Newfoundland	6160		
2100-2200	CBU, Vancouver, British Columbia	6160		
2100-2200	CFCF, Montreal, Quebec, Canada	6005		
2100-2200	CFCN, Calgary, Alberta, Canada	6030		
2100-2200	CHNS, Halifax, Nova Scotia, Canada	6130		
2100-2200	Christian Science World Service	13770	15610	17555
2100-2200	CKWX, Vancouver, British Columbia	6080		
2100-2200	CFRB, Toronto, Ontario	6070		
2100-2200	KUSW, Salt Lake City, Utah	15650		
2100-2200	Radio Australia, Melbourne	9580	9620	15160 15240
		15395		
2100-2200	Radio Baghdad, Iraq	13660		
2100-2200	Radio Beijing, China	9820	11500	
2100-2200	Radio Jordan, Amman	9560		
2100-2200	Radio Moscow World Service, USSR	4060	5905	5950 6030
		7170	7290	7350 9450
		9620	9685	9730 9755
		9780	9790	9795 9800
		9820	9860	9870 9895
		11685	11840	11850 12050
		15130	15405	15425
2100-2200	Radio for Peace, Costa Rica	21566	25944	
2100-2200	RAE, Buenos Aires, Argentina	11710	15345	
2100-2200	Voice of America-Africa Service	7195	15410	15445 15580
		15600	17785	17800 17870
		21485		
2100-2200	Voice of America-Middle East Service	6040	9700	9760 11760
		15205		
2100-2200	Voice of America-Pacific Service	11870	15185	17735
2100-2200	Voice of Turkey, Ankara, Turkey	9825		
2100-2200	WHRI, Noblesville, Indiana	13760	17830	
2100-2200	WINB, Red Lion, Pennsylvania	15185		
2100-2200	IRR WRNO Worldwide, Louisiana	13720		
2100-2200	WWCR, Nashville, Tennessee	15690		
2100-2200	WYFR, Oakland, California	9455	11830	13695 17612.5
		17845	21525	
2110-2200	Radio Damascus, Syria	15095	17710	
2115-2130	M-F BBC Caribbean Service, London	5975	15400	17715
2130-2145	BBC English by Radio, London	11945	15280	
2130-2200	BBC English by Radio, London	6125	7125	9635
2130-2200	T-F BBC Falkland Islands Service, London	9915		
2130-2200	HCJB, Quito, Ecuador	17790	21470	

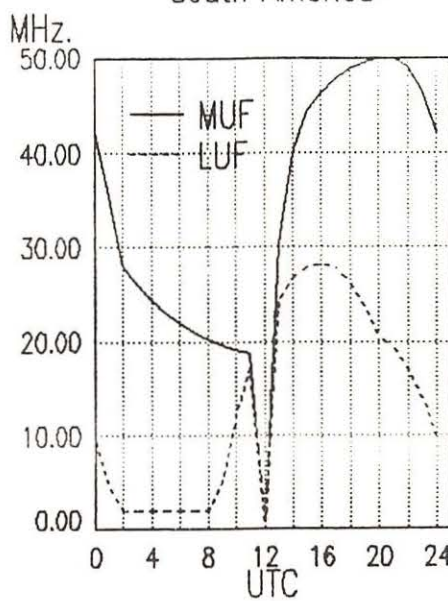
2200 UTC [5:00 PM EST/2:00 PM PST]

2200-2205	Radio Damascus, Syria	15095	17710	
2200-2215	M-AABC, Alice Springs, Australia	2310	(ML)	
2200-2215	ABC, Tennant Creek, Australia	2325	(ML)	
2200-2215	BBC English by Radio, London	11945	15280	
2200-2215	M-F Voice of America-Caribbean Service	9640	11880	15225
2200-2225	BRT, Brussels, Belgium	5910	9925	
2200-2225	Radio Finland, Helsinki	6120		
2200-2225	RAI, Rome, Italy	5990	7235	9710
2200-2230	ABC, Katherine, Australia	2485		
2200-2300	All India Radio, New Delhi	7412	9550	9910 11620
		11715		
2200-2230	S KGEI, San Francisco, California	15280		
2200-2230	S Radio Norway International, Oslo	15225		
2200-2245	Radio Berlin Int'l, East Germany	9730		
2200-2245	Radio Yugoslavia, Belgrade	7215	9620	9660 11735
2200-2250	Radio Baghdad, Iraq	13660		
2200-2300	BBC World Service, London, England	3915	3955	5975 6005
		6175	6195	7325 9410
		9570	9590	9595 9915
		11750	11955	12095 15140
		15260	15400	
2200-2300	CBC Northern Quebec Service, Can	9625		
2200-2300	CBN, St. John's, Newfoundland	6160		
2200-2300	CBU, Vancouver, British Columbia	6160		
2200-2300	CFCF, Montreal, Quebec, Canada	6005		
2200-2300	CFCN, Calgary, Alberta, Canada	6030		
2200-2300	CHNS, Halifax, Nova Scotia, Canada	6130		
2200-2300	Christian Science World Service	9465	15300	17555
2200-2300	CKWX, Vancouver, British Columbia	6080		
2200-2300	CFRB, Toronto, Ontario	6070		
2200-2300	KUSW, Salt Lake City, Utah	15580		
2200-2300	OH, Rancho Simi, California	17775		
2200-2300	Radio Australia, Melbourne	15160	15240	15320 15395
		17795	21740	
2200-2300	Radio Havana Cuba	7140		
2200-2300	Radio Moscow World Service, USSR	4060	5905	5950 6000
		6030	6055	7150 7170
		7280	9450	9620 9680
		9755	9790	9820 9860
		9870	11850	12050 15130
		15405	15425	17570 17655
		17700	17720	

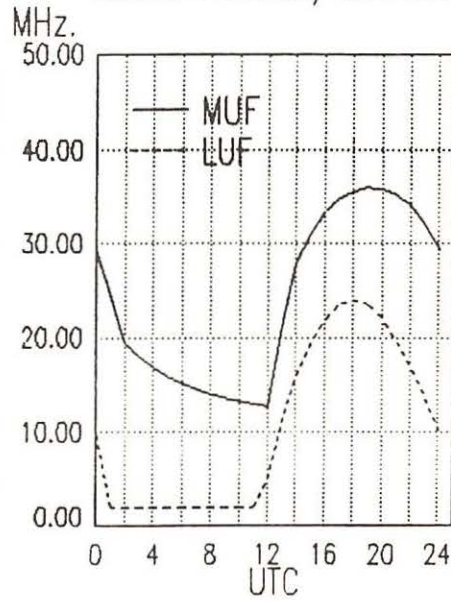
West Coast To
Australia



West Coast To
South America



West Coast To
Central America/Caribbean



West Coast

frequency section

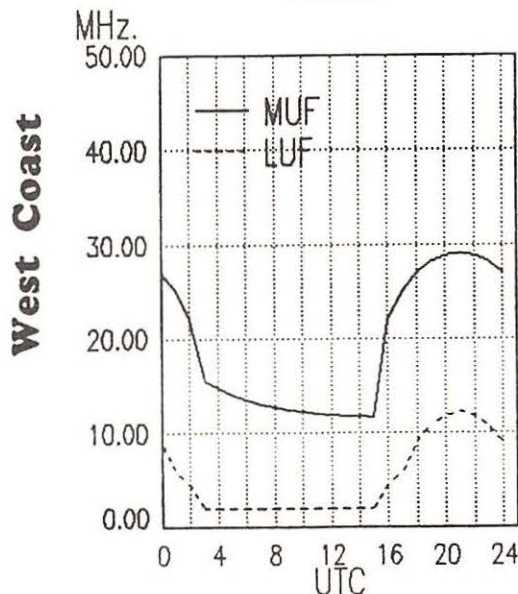
2200-2300	Radio Tonga, Kingdom of Tonga	5025			
2200-2300	Voice of America-East Asia Service	7120	9770	11760	15185
		15290	15305	17735	17820
2200-2300	Voice of America-Eur/Pac. Service	9852	11805	15345	15370
		17610			
2200-2300	Voice of Free China, Taiwan	11805			
2200-2300	Voice of U.A.E., Abu Dhabi, United Arab Emirates	9595	11985	13605	
2200-2300	WHRI, Noblesville, Indiana	13760	17830		
2200-2300	IRR WRNO Worldwide, Louisiana	15420			
2200-2300	WWCR, Nashville, Tennessee	15690			
2200-2300	WYFR, Oakland, California	11830	13695	15215	17612.5
		17845	21525		
2205-2220	Vatican Radio, Vatican City	9615	11830	15105	
2230-2300	Kol Israel, Jerusalem	9435	11605	13750	15615
2230-2300	Radio for Peace Int'l, Costa Rica	7375	13660	21565	25945
2230-2300	Radio Polonia, Warsaw, Poland	5995	6135	7125	7270
2230-2300	Swiss Radio Int'l, European Service	6190			
2245-2300	BBC English by Radio, London	7180	11945		
2245-2300	Radio Berlin Int'l, East Germany	5965	9730		
2245-2300	Radio New Zealand, Wellington	15485	17705		

2300 UTC [6:00 PM EST/3:00 PM PST]

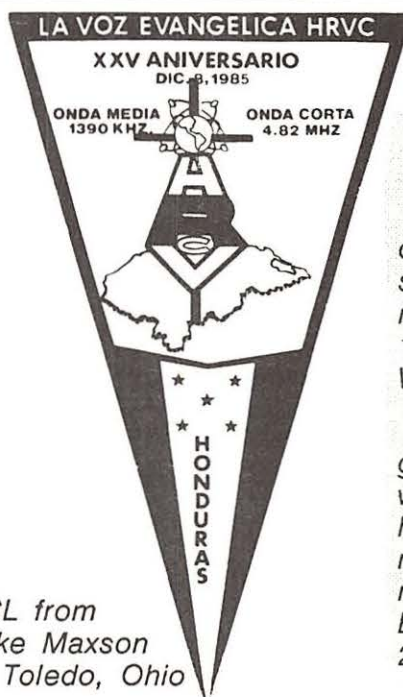
2300-2315	BBC World Service, London, England	3915	5975	6175	6195
		7325	9570	9590	9915
		11750	11945	11955	15260
		17875			
2300-2315	FEBC, Manila, Philippines	6030			
2300-2330	BBC English by Radio, London	6110	9825	11765	11820
		15390			
2300-2330	Radio Berlin Int'l, East Germany	5965	9730		
2300-2330	Radio Norway International, Oslo	9605			
2300-2330	Radio Vilnius, Lithuanian SSR	7400	9700	9765	15180
		15455	17665	17690	
2300-2345	WYFR, Oakland, California	5985	9505		
2300-0000	A.S. Adventist World Radio-Asia, Guam	15125			
2300-0000	BBC World Service, London, England	5975	6175	6195	7325
		9570	9590	9915	11750
		11945	11955	15260	17875
2300-0000	CBN, St. John's, Newfoundland	6160			
2300-0000	CBU, Vancouver, British Columbia	6160			
2300-0000	CFCF, Montreal, Quebec, Canada	6005			
2300-0000	CFCN, Calgary, Alberta, Canada	6030			

2300-0000	CHNS, Halifax, Nova Scotia, Canada	6130			
2300-0000	Christian Science World Service	9465	15300	17555	
2300-0000	CKWX, Vancouver, British Columbia	6080			
2300-0000	CFRB, Toronto, Ontario	6070			
2300-0000	KUSW, Salt Lake City, Utah	15580			
2300-0000	KVOH, Rancho Simi, California	17775			
2300-0000	Radio Australia, Melbourne	15160	15240	15320	15395
		17795	21740		
2300-0000	Radio Japan, Tokyo	11835	15195	17810	21610
2300-0000	Radio Luxembourg	6090			
2300-0000	Radio Moscow N. American Service	6045	7115	7150	9685
		9720	12050	15425	17605
		17700	17720	21470	
2300-0000	Radio Moscow World Service, USSR	7135	7370	9510	9790
		11800	11985	12045	15130
		15140	15295	15420	17570
		17610	17655	17775	21690
		21790			
2300-0000	Radio New Zealand, Wellington	15485	17705		
2300-0000	Radio for Peace, Costa Rica	21566	25946		
2300-0000	Radio Sofia, Bulgaria	9700	11680		
2300-0000	Radio Tonga, Kingdom of Tonga	5025			
2300-0000	Voice of America-East Asia Service	7120	9770	11760	15185
		15290	15305	17735	17820
2300-0000	Voice of Turkey, Ankara, Turkey	9445	9665	9685	17760
2300-0000	Voice of U.A.E., Abu Dhabi, United Arab Emirates	9595	11985	13605	
2300-0000	WHRI, Noblesville, Indiana	13760	17830		
2300-0000	IRR WRNO, New Orleans, Louisiana	15420			
2300-0000	IRR WWCR, Nashville, Tennessee	15690			
2305-2355	Radio Polonia, Warsaw, Poland	5995	6135	7125	7145
		7270			
2315-2330	BBC World Service, London, England	5975	6110	6175	6195
		7145	7325	9570	9590
		9825	9915	11750	11765
		11820	11945	11955	15260
		15390	17875		
2330-2345	BBC English by Radio, London	3915	6080	7180	11865
2330-0000	BBC World Service, London, England	5975	6110	6175	6195
		7325	9570	9590	9825
		9915	11750	11765	11820
		11945	15260	15390	17875
2330-0000	Swiss Radio International, Berne	6190			

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The Well-Balanced Frog

When you think of mega-marketing world band radio companies, a few names often spring to mind: Sony. Panasonic. Yaesu. What most people don't realize is that one of these companies produces only a single shortwave receiver.

That company is Japan's Yaesu Musen Company and their single world band receiver is the mid-priced FRG-8800. Often known simply as the "Frog," the '8800 is a direct descendant of the FRG-7700, a receiver that first appeared on the market in 1981.

Familiar Roster of Features

The '8800, as sold in North America, covers longwave, AM and the entire shortwave spectrum to 30 MHz. With an optional converter, some VHF reception is possible, as well.

It has the usual gamut of tuning features -- keypad, tuning knob, a dozen memories, and a scanner -- plus digital readout of not only the frequency, but also the signal strength and time in two time zones.

Balanced Performance

The '8800's performance is relatively balanced. Unlike some receivers that excel in certain respects, but are relatively weak in others, the engineering of the '8800 has been generally well thought out.

Overall, performance is quite good, with sensitivity and blocking being especially worthy. Another plus is audio quality

which, although not exceptional, is above average for a tabletop model.

Still, some things work less well than others. On the down side is the '8800's array of voice bandwidths from which you can choose: 8.3 and 3.8 kHz at -6 dB, as measured in our laboratory.

These are high-quality filters with excellent shape factors, but each is somewhat broader than most listeners would like. Three and 6 kHz, say, would have been more appropriate for listening to world band broadcasts. Of course, for single sideband this is even more true.

Replacement Bandwidth Filter Available

For DXers wanting a replacement bandwidth filter that's both of high quality and narrower, California's Radio West (619/726-3910) offers a range of Collins mechanical filters to replace the ceramic filters that come standard from the factory.

By inserting a Collins so-called 2.9 kHz or 1.9 kHz filter (these are 1.9 and 2.9 kHz at -3 dB, and thus are a bit over 2 and 3 kHz, respectively, at -6 dB), you wind up with a choice between the new 3 kHz (or 2 kHz) mechanical and stock 3.8 kHz ceramic filters.

The price for this modification -- \$225, including labor -- is steep, but the Collins filter is a deluxe item that normally is found on pricey professional-caliber communications receivers, such as the RACAL 6790/GM.



Mediocre Image Rejection Improved by Preselector

Another variable that is not quite up to snuff is image rejection. This means that the '8800 allows some "repeats" to appear 910 kHz below the frequency where the station is actually operating.

This usually is not a significant problem. However, it can be resolved -- and sensitivity upgraded, to boot -- by the use of a good tunable preselector, such as the Palomar P-308 or P-305.

Overall, the Yaesu FRG-8800 is a nice receiver. Still, the difference in the street price between an '8800 and the superb Kenwood R-5000 is between \$150-250, depending on whether you purchase the Kenwood with the optional high-quality 6 kHz filter.

The Yaesu FRG-8800 currently lists for \$784.00.



You can hear Larry Magne's equipment reviews the first Saturday of each month, plus Passport editors Don Jensen and Tony Jones the third Saturday, over Radio Canada's "SWL Digest." For North America, "SWL Digest" is heard at 8:10 PM ET on 5960 and 9535 kHz, with a repeat Tuesday at 8:30 AM ET on 9635, 11855 and 17820 kHz.

Passport's "RDI White Paper" equipment reports contain everything found during its exhaustive tests of communications receivers and advanced portables. These reports are available in the U.S. from Universal Shortwave and EEB; in Canada from PIF, C.P. 232, L.d.R., Laval PQ H7N 4Z9; and in Europe from Interbooks, 8 Abbot Street, Perth PH2 0EB, Scotland.

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The Radio Shack PRO-2022 Scanner

The new Realistic PRO-2022 scanner is a PRO-2005 look-alike, but is scaled down in terms of frequency range and memory capacity. It is more conventional, featuring frequency ranges of 30-54, 108-174, 380-512 and 806-960 MHz (cellular channels deleted).

Up to 200 channels may be memorized in ten 20-channel banks. The black plastic cabinet employs front tilt brackets for improved viewing angle; a brilliantly-backlit LCD is easy to read in any lighting condition.

A permanently-attached AC cord allows operation from 120 VAC, 60 Hz, and a 12 VDC jack permits mobile installation (no mobile mount kit or DC cord is included, however). A nine-volt battery

(not included) must be inserted into a rear-panel compartment for memory backup.

A telescoping whip antenna (provided) fits through a top hole in the cabinet; for use with an external antenna, a rear-apron BNC connector is accessible. Earphones may be plugged into the front panel jack, or an external speaker may be attached to another jack on the rear apron.

A rubberized keypad allows control of up/down search, individual channel delay, individual channel lockout, selectable channel priority, six-channel scratchpad search memory and other normal scanner functions described earlier.

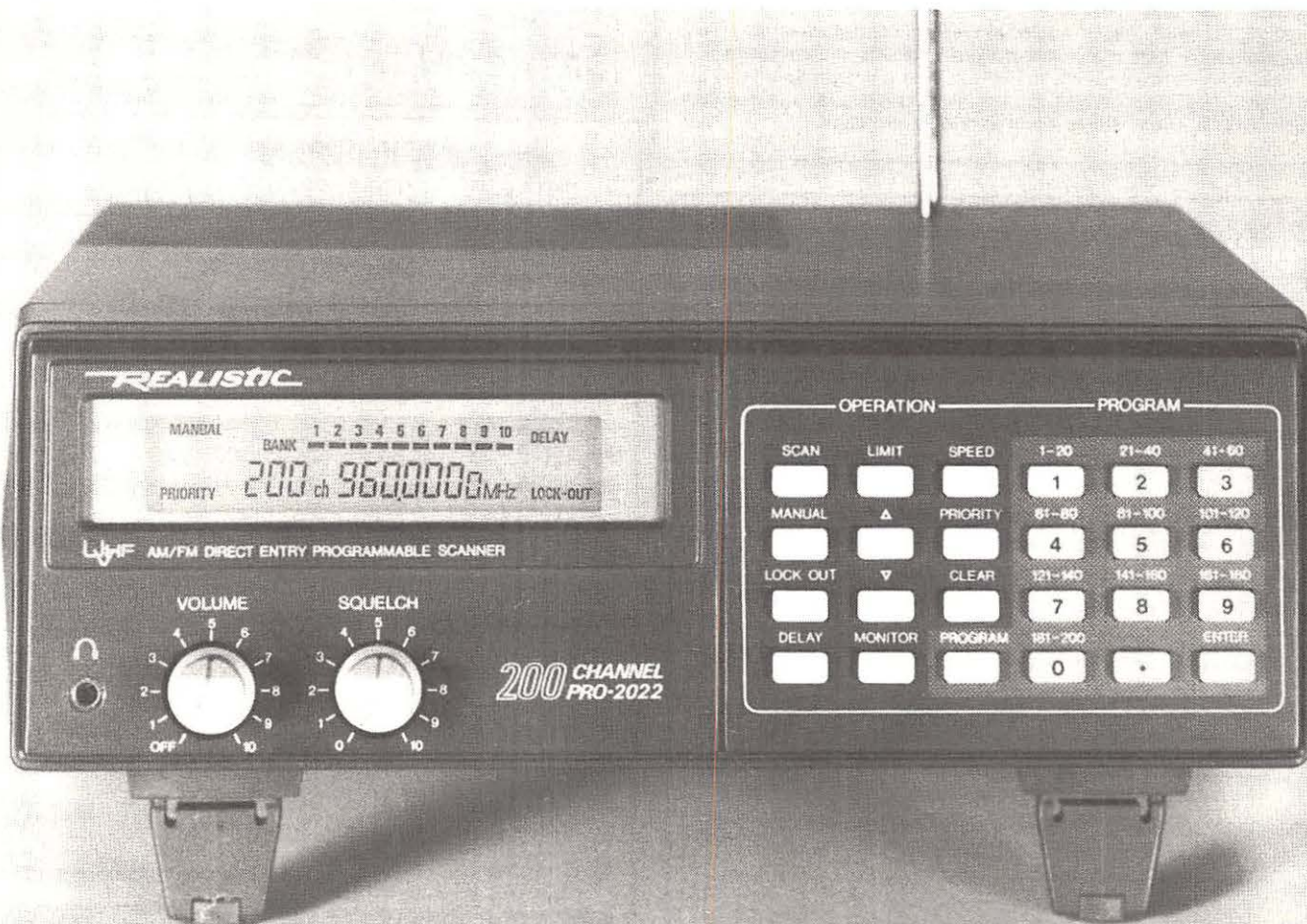
The sensitivity and selectivity specifications for the 2022 are rather conservative;

our lab tests show the 2022 to be as sensitive as most other scanners on the market (much better than the nominal 1.0 microvolt shown in the table), with adjacent channel selectivity and image rejection on par with the contenders. Nothing special, but no disappointments, either.

Scan/search speed is much faster than specified in the manual; our sample ran at approximately 25 channels per second at high speed and 12 channels per second at low speed.

A cut above the PRO-2024 reviewed previously in *MT*, the PRO-2022 is now available for \$349.95 at Radio Shack stores across the nation.

mt



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Super Converter™ 8001 (810 - 912 MHz coverage, etc.), and more.

The **Super Converter™ II** has a convenient switch which allows for an instant return to normal scanning frequencies without disconnecting the unit. It is also equipped with BNC connectors for easy adaptability to your handheld scanner.



Introducing the **Super Converter 8001™** from GRE America, Inc. The **Super Converter 8001™** once attached allows any UHF scanning or monitoring receiver to receive the 810 to 912 MHz band.

It has been our experience that most scanning radios suffer from a lack of sensitivity due to antenna and power limitations. Introducing the GRE **Super Amplifier™**. The **Super Amplifier™** is a compact pre-amp designed to work with scanners and it amplifies the reception of the VHF/UHF bands (from 100MHz to 1GHz) as high as 20db.

The **Super Amplifier™** has an adjustable gain which is controlled from the back of the unit and allows amplification level of up to 20db through all frequencies, equipped with a bypass switch to return to normal scanning frequencies. As with all other GRE products, you will find the quality and design of the **Super Amplifier™** to be of the highest standard.

Wide range frequency (up to 1GHz) antenna is exclusively available from GRE America, Inc.

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We are very gratified by the eagerness with which our readers await their new issue of Monitoring Times. In order to keep our news as timely as possible, we cut our deadlines very close. If your MT doesn't show up in your mailbox, please don't call us for a replacement issue until the tenth of the current month, just in case it's delayed a couple of days. Our staff will be greatly appreciative.

catalogs

Wind and Weather

Every once in a while we get a catalogue so attractive in both presentation and product that we have a hard time holding on to our checkbook. Mind you, we're supposed to be objective. Keep our personal tastes out of this.

No, journalism be darned. The Wind and Weather catalogue is pure delight from cover to cover.

"Wind and Weather" is, in the words of the staff, "dedicated to the gentle pastime as well as the serious business of weather watching." Almost half the catalogue is devoted to weather instruments. Weathervanes occupy another major portion of the catalogue.

We've always supported the idea of weather monitoring as an important adjunct of communications monitoring, especially scanning. You'll be in better shape to know what to expect if you know what's going -- and what will be

going -- on outside.

Check out the auto-alert weather radio that sounds an alarm when bad weather -- and good listening -- is on the way (You can also use a touch bar to hear any one of three National Weather Service channels. It's \$60.00 plus \$4.00 shipping.

The rainwise Oracle I provides a digital display of outdoor temperature, barometric pressure, wind speed, wind direction, and wind chill. It is \$634.00 plus \$14.00 shipping.

The computer-age Rainwise Weatherstation monitors seven different functions and rings in at \$1029.00; the same unit with computer-compatible RS-232 output is \$1339.00 plus 20.00 shipping.

The Wind and Weather catalogue is free from The Albion Street Water Tower, P.O. Box 2320, Mendocino, California 95460.



Electronics from Gas

I'm not sure how long this sort of thing has been going on, but gas stations have started to become department stores.

Sure, just about everyone's gotten used to the fact that you can now get a carton of Twinkies and a can of diet Coke at your favorite service station along with -- gas. But you now have the opportunity to purchase electronics from your favorite gas company as well.

Yes, stuffed in with your credit card statement is a virtual department store of THINGS. Things like "CounterAttack -- The Car Alarm That's Like Having A Guard Dog Inside Your Car."

But let's not waste time and get right to the good stuff.

Those of you who do not have fancy receivers with

scads of memory for storing and retrieving your favorite frequencies might want to check out the "Pocket Phone Bank."

The people at Gulf market this little gem as an electronic phone directory. But you can use it to store frequency information. Never again be at a loss for the BBC's main frequency. Or the NOAA weather channel. It'll all be there at the touch of a button. The "Pocket Phone Bank" is just \$29.95 plus \$4.95 shipping.

Also available from your friends at Gulf: a Regency "Programmable Hand-Held Scanner" for just \$199.92 plus 5.88 shipping, a Sony

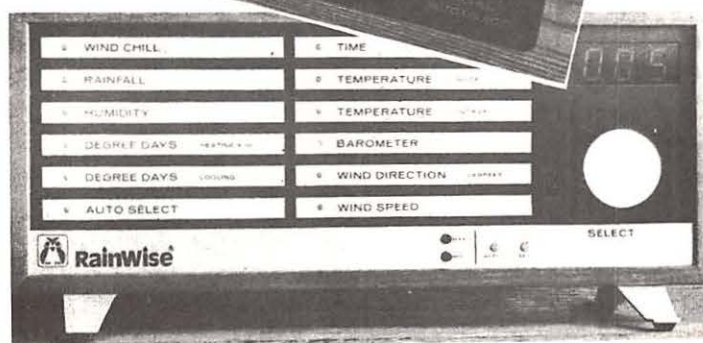
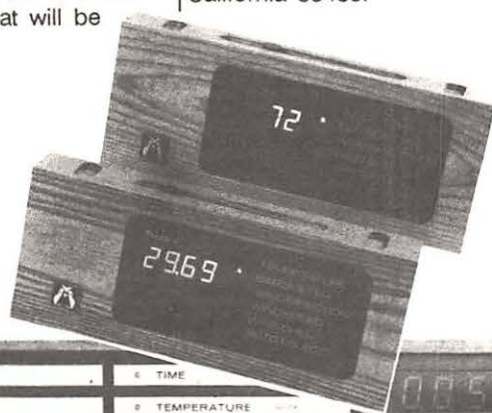


"WatchCube" color TV for \$499.92 plus 7.92 shipping and the Southwestern Bell "Freedom Phone" for just \$179.88.

For more information call 312-764-8210. How long before ICOM R-71A's start appearing on gas station shelves along side the Doritos is anyone's guess.

Hunting with Radio

Last month, author Bob Kay wrote an article on how poachers use two-way radios to coordinate their efforts in the woods. Well, according to *The Sportsman's Guide*, these two way radios are also used by legitimate hunters. One such unit is, appro-





HUNTER'S HANDS-OFF FM 2-WAY RADIO

By **MIDLAND**

privately, called "The Hunter's Hands-Free FM 2-Way Radio."

Says the catalogue: "Keep in contact with your huntin' buddies up to 1/2 mile away and let 'em know when that big buck's headin' their way."

The unit is about 2-1/2" W x 4-5/8" H x 1" deep and weighs about 0 ounces. You can pick one of these up by calling 1-800-888-6006 and asking them to charge \$69.99 plus \$4.95 shipping to your credit card.

Be forewarned that while *The Sportsman's Guide* is primarily a hunting catalogue, it contains a number of other items that are in appallingly bad taste.

"Catalogs" welcomes your participation. See something interesting in your pile of fresh junk mail? Clip it and send it in! Add your own comments.

Be sure to include the name of the catalog, the item's description, price and shipping information along with the phone order number. Send it to "Catalogs," P.O. Box 98, Brasstown, NC 28902.

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MT

Dip Meters and How to Use Them

What's this? You've never used a dip meter in your workshop or when checking antenna resonance? I've discovered that the once-universal dip meter, or dipper, is an instrument that is practically unknown to today's experimenter.

These electronic tools were known as "grid-dip oscillators" in the vacuum-tube days, and many of those older units are still in service. Heath, Millen, and Eico companies were prime suppliers of tube type dip meters.

The "Cadillac" of grid dippers is the Measurements Corporation two-piece unit. It is a laboratory-grade instrument that has a separate tuning head (most other dip meters are one-piece devices) that is connected to a husky base unit that has a large indicating meter.

I have one of these fine old dippers for lab work. I use a solid-state Kenwood dipper for portable and field measurements. Keep an eye out for a clean, used dipper at electronics flea markets. They can often be purchased for as little as \$10.

How Does a Dip Meter Operate?

A dip meter, whether it is a tube or transistor unit, is a tunable oscillator. It covers a wide frequency range by virtue of plug-in coils that serve as probes for checking circuit resonance. Most low-cost dippers tune from, say, 1.6 MHz to as high as 200 MHz. My Measurement Corporation dip meter tunes to 420 MHz, and a special tuning head permits using it below the standard AM broadcast band.

The plug-in coils for dippers are part of the oscillator tuned circuit. In other words, the tuned circuit coil is outboard from the cabinet, while the tuning capacitor is inboard. Each coil covers a fairly wide tuning range, such as 1.6 to 4.5 MHz.

When the dipper is tuned to the resonant frequency of an external tuned circuit that is being tested, the grid, base, or gate current of the oscillator in the dipper (depending upon the oscillator device used) declines when the dipper is tuned to the same frequency as the circuit under test. This results in a sharp drop in the indication as seen on the face of the dipper's panel meter. This pronounced dip in meter reading is the phenomenon that led to the naming of the instrument.

The dipper plug-in coil is placed close to the tuned circuit being checked in order to provide adequate coupling for obtaining a dip in meter reading. Generally, there is a spacing of less than one inch between the dipper coil and the coil of the circuit under test.

Most dippers have a feature that permits the instrument to be used as a wave meter. When the OSC/WAVEMETER switch is set for wavemeter action, the circuit no longer oscillates. The oscillator device then functions as a detector diode. Output from the detector deflects the panel meter when the dipper is tuned to the same frequency as the external RF energy source, such as the tuned circuit in an RF oscillator, or an RF amplifier that is supplied with driving power.

The dip meter can also sample RF energy from an antenna when it is used as an absorption wavemeter. Figure 1 shows the circuit of a very basic dip meter that used a JFET (junction field-effect transistor) as an oscillator. L1 is one of the plug-in coils. M1

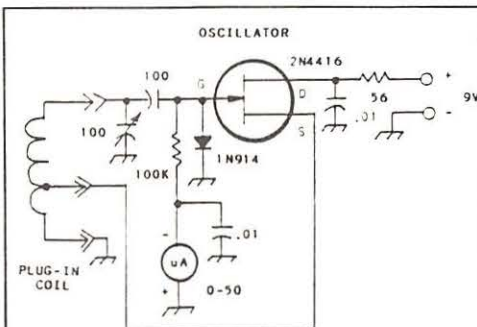


Figure 1 -- Schematic diagram of a functional gate-dip oscillator. The micro-ampere meter reads the change in FET base current as the dipper is tuned to the frequency of the resonant circuit under test. Plug-in coils provide a wide range of test frequencies.

displays the gate current of Q1.

How to Use a Dip Meter

Let's suppose that you need a tuned circuit that covers from 3 to 5 MHz. You calculate the number of coil turns as closely as you can. You now connect the home-made coil in parallel with a suitable tuning capacitor. The test circuit is laid on a nonmetallic surface (wooden workbench, etc.). You insert a dipper coil (into the dip meter) that covers the frequency range of interest. The dipper coil, which serves as the sampling probe, is placed near one end of the coil to be probed.

The proper method is shown in Figure 2. The dipper coil should be in the same plane as the coil being probed. You may not obtain a dip reading if you place the dipper coil at right angles to the coil under test.

Start with the dipper coil against one end of

the coil you are testing. Adjust the dipper dial (or the external tuned-circuit variable capacitor) until you see a sharp dip (left-hand drop in meter indication) on the meter. Now, back off on the spacing between the dipper probe and the test coil and find the dip again. Repeat this process until the dip is barely discernible. This is the best distance for proper coupling between the tuned circuits.

You may now read the frequency that is indicated on the dipper readout dial. This is the approximate frequency of the tuned circuit you just tested. Dipper dials are not highly accurate. If you wish to be more precise, find the dip and allow the dipper to rest on the workbench. Tune for the dipper signal on a general-coverage receiver that has an accurate frequency readout. The dipper's signal should be fairly loud in your receiver.

You can determine the relative Q (quality factor) of a tuned circuit by observing how close the dipper probe must be in order to obtain a dip. The higher the test-circuit Q the farther the away dipper will be, while still getting a sharp dip in meter reading. Very tight (close) coupling is usually necessary when checking low-Q tuned circuits.

Dipping a Toroidal Tuned Circuit

Coils that are wound on toroids (doughnut-shaped magnetic cores) are inherently self-shielding. This means that your dipper will not couple to them as it will when checking a solenoidal air-wound coil, or one that is wound on a cylindrical coil form. This can be frustrating!

Take heart, because there is a simple way to check these tuned circuits with a dip meter. Figure 3 shows two methods for doing this. One technique is to wrap a small link through the toroid and connect it to a similar small link, as shown. The dipper coil is then inserted into the external link.

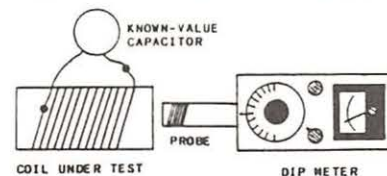


Figure 2 -- The dip-meter coil should be in the same plane as the coil being tested, as shown. Best results are had when the dipper coil is as far as practical from the test coil, consistent with obtaining a dip in meter reading.

SEEKER PC File Knobs Mode Utility Setup HELP				FREQUENCY RANGE SCAN	
TIME/DATE	UTC: 02:18:59 Friday	LOCAL: 17:18:59 Thursday	10-26-1989		
VFO A:	15.315.000 AM	FREQ UP	SIGNAL LEVEL: 125456789		
VFO B:	9.535.000 AM	FREQ DOWN	CUTOFF LEVEL:		
MEM # 98:	9.580.000 AM	AM LSB RTTY	DATABASE: INT-BRDC		
STEPSIZE:	0.001.000	CU USB FM			
STATUS (OFF/ON)		AUTOSEEK	PRINT LOG	DATABASE LOG	RECORDER
Evaluator: AUTOSEEK SCANNING ACTIVE			Loops complete: 3		
FREQUENCY RANGE SCAN DATABASE					
STATUS: ACTIVE RECORD 271 of 288					
DESC: 31 meter band					
START FREQ (MHz): 9.500.000			END FREQ (MHz): 9.775.000		
SCAN STEP SIZE (MHz): 0.005.000			MODE (A-U-L-C-R-F): A		
MAXIMUM EVAL PERIOD (Seconds): 2			MAXIMUM PAUSE (0=Continuous): 5		
MINIMUM SIGNAL LEVEL (0-9): 7					
TIMES - START: 01:58			END: 04:00		
LOGGING - TAPE? (Y/N): Y			PRINTER? (Y/N): Y		
			DATABASE? (Y/N): Y		

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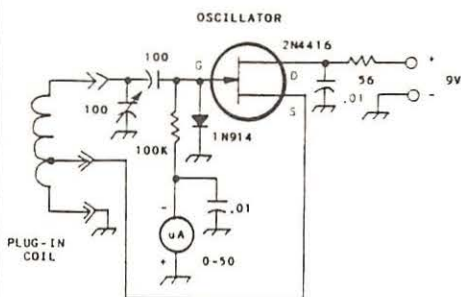


Figure 3 -- Example A shows how to check a tuned circuit that uses a toroid coil (see text). A small link is wound over the toroid winding (heavy lines) and it is connected to a small external link. The dipper coil is placed near the external link. Illustration B shows how to couple to a toroidal tuned circuit by placing the dipper coil inside the loop formed by the pigtailed of the fixed-value capacitor.

If you attach a fixed-value capacitor to the toroid, allow sufficient pigtail length to permit inserting the dip-meter coil between the toroid and the body of the capacitor. This provides sufficient dipper coupling to find the tuned-circuit resonance. The capacitor and its leads form a one-turn coupling link.

Measuring Coil Inductance with a Dip Meter

The inductance in microhenries (μH) of an unknown coil can be found if you place a known-value capacitor in parallel with the coil, then find the resonant frequency with your dipper. The coil inductance may be obtained from an inductance-capacitance-frequency nomograph, such as those contained in the first edition of *The ARRL Electronics Data Book*. You may also use the ARRL L/C/F Calculator, type A (no longer available) if you have one on hand.

The equation for finding inductance when the capacitance and frequency are known is presented here in simple form:

$$L = 1/(2 \pi f)^2 C$$

where L is the inductance, f is the frequency and C is the known capacitance for resonance. $\pi = 3.14$. Thus, if our measured resonant frequency is 4 MHz and the fixed-value capacitor across the unknown coil is 220 pF, the coil inductance is 7.2 μH . In this example, f is rendered in MHz, the capacitance is in pF, and the inductance is in μH . The actual formula is $L(\mu\text{H}) = 10^6/(6.28 \times 4)^2 \times 220$, which yields an inductance of 7.2 μH .

Your Dipper as a Wavemeter

Tuned circuits and broadband transformers that have RF energy flowing in them can be sampled by using your dipper as an absorption

wavemeter. Plug in the appropriate coil and adjust your dipper frequency dial until the indicating meter deflects sharply to the right (up scale). This shows the operating frequency of the stage being checked. The dipper coil is placed near the circuit being probed.

CAUTION: Do not place your dip-meter coil near any circuit that contains high voltage or high levels of RF power (such as a high-power tube type of RF amplifier). Accidental contact with dangerous voltages can be lethal.

Checking Antenna Resonance

You may determine the resonant frequency of a dipole or vertical antenna by using a dip meter as you would with a tuned circuit. For example, if you wish to check resonance for a vertical antenna, simply remove the feed line and place a small three-turn coil between the feed point and ground. Insert the dipper coil into this link and tune for a dip.

Dipole antennas may be checked in a like manner. Remove the feed line and insert the three-turn coil between the two legs of the dipole (feed point), probe the link and tune for a dip in meter reading.

Vertical and dipole antennas may be checked also with a feed line attached. Connect the three-turn test link across the equipment end of the coaxial feed line and find a dip. Beware of dips that occur at the

harmonic frequencies of the antenna. These are generally shallower dips than those you will observe at the fundamental frequency of the antenna.

Signal-Generator Operation

Since your dip meter is a tunable oscillator, you may use it as a signal generator. Although you can't couple it directly to your receiver, it will radiate a signal that you can hear in your receiver. I have used a dip meter for coarse alignment of a number of receiver front ends and IF amplifiers.

Some Final Comments

Older editions of *The Radio Amateur's Handbook* (ARRL) contain complete information about building a dip meter.¹ The 1984 edition of this book describes a simple home-made unit you can build easily and inexpensively. Check your local library for back editions of this book.

Your workshop is not complete without a dip meter. I urge you to build or buy one. Once you learn how to use a dipper, you'll never want to be without one!

¹Also see B. Clark, "A Hybrid Gate-Dip Oscillator," *QST* for June 1974, p.33.

PRO-2004/2005 Mods

I was fortunate enough to start the new year out with an MU-7700 memory unit for my FRG-7700 receiver, and also the matching tuner (FRT-7700) and the VHF converter (FRC-7700).

The MU-7700 came from Bob Leary at Galaxy Electronics, Box 1202, 67 Eber Avenue, Akron, OH 44308 (tel: 216-376-2402). Bob has a limited supply of MU-7700s new, in the original box, for any of you out there that need to get a memory unit for your FRG-7700. Please write or call Galaxy Electronics and confirm that Bob still has them in stock prior to sending off any money.

Bob also tells me that Galaxy specializes in hard-to-find and out-of-production accessories for other rigs in addition to handling lots of used gear. Some of your best buys in radio are via used equipment. So far, I've found only two places that do a brisk used gear business -- Galaxy Electronics and Fred Osterman's Universal Shortwave, 1280 Aida Dr., Reynoldsburg, OH 43068 (1-800-431-3939).

I have personally used both of these dealers. Bob and Fred take great pride in turning around good quality used gear at affordable prices. Both have a huge selection of new gear. So, if you didn't get what you really wanted, give yourself a Christmas present; check out the used gear at either (or both) of these locations.

Now ... if I could just find the FRA-7700 active antenna ...

It seems I've managed to leave out the scanner buffs over the last several columns, so here are some mods for a couple of scanners. First we'll review some mods for the Radio Shack 2004. These are identical to the sheet sent out by Grove Enterprises to those requesting 2004 mods. Then we will upgrade the new Radio Shack 2005 with a modification from MT's Bob Grove as a finale.

PRO2004 IMPROVEMENTS

Before setting out to perform these modifications, be aware that none of them should be attempted by anyone unfamiliar with electronic circuitry and components. *Modifications will void your warranty!*

TOOLS REQUIRED: Small wire cutters, small Phillips screwdriver, thin-gauge rosin core solder, needle (for clearing solder holes), desoldering tool or braid, 1N914 (1N4148) small signal diodes (2), 10 MHz crystal, needle-nose pliers.

Power cord unplugged, remove the four

rear cabinet screws and carefully but firmly slide the chassis from the enclosure. Turn the chassis upside down, keyboard facing you, and locate circuit board PC3.

824-851, 869-896 MHz Restoration with 30 kHz Increments

Note: It is no longer lawful to monitor mobile telephone -- including cellular -- communications. This modification is intended only to restore continuous 800-1300 MHz coverage as originally provided by the design of the PRO2004 microprocessor.

Gently pull the cover off the shielded compartment on PC3. Note the straight row of components on the left side of the compartment. Locate diode D513 and snip the lead midway so that it may be resoldered later if desired. Spread the gap slightly.

Plug the radio into the power outlet, switch it on and press RESET. Enter the frequency 845.0000 to be sure the modification was successful (no ERROR is displayed). Switch off the radio and unplug it from the power source. If this is the only modification you are attempting, replace the shield cover and reassemble the radio. If not, move on to the next modification.

26 Channels-per-second Scan/Search Speed

Locate ceramic resonator CX501 at the rear right corner of PC3. Remove the seven screws holding the board in place; carefully unplug connector CN501 at the left rear corner and turn the board over to expose the solder pads.

Using a desoldering tool or braid, unsolder the three leads of CX501 and remove it. Clear the three holes with a pin if necessary. Fully insert the leads of the 8 MHz resonator through the three holes and solder them in place.

Locate the holes for diode D514; remove any excess solder. Select a 1N914 diode and bend the lead closest to the cathode stripe. Install it in the D514 holes so that it matches the adjacent diodes. Solder it carefully in place and snip excess wire.

Set PC3 back into position and reconnect CN501. Plug the radio into a power outlet, turn it on and, with the squelch set midway, verify faster scan speed. The SPEED fast/slow key will still function. Unplug the power cord and reassemble if no more modifications are intended.

400 Channel Memory

The seven screws holding down PC3 will have to be removed and connector CN501, located at the left rear, will have to be carefully unplugged for this modification. Locate the holes for D510; they aren't marked, so count back from D513 -- it is the last set of holes in the row of diodes. Clean them of solder if necessary.

Select a 1N914 diode and bend the lead closest to the cathode stripe. Install it in the D510 holes so that it matches the adjacent diode. Solder it carefully in place and snip excess wire. Set PC3 back into position and reconnect CN501. Plug the radio into a power outlet, turn it on and press MANUAL, 400, MANUAL, confirming the presence of 400 memory channels.

Remove the upper portion of the backing on the keypad overlay and very carefully align it with the upper edge of the keypad. Remove the rest of the backing as you slowly roll the adhesive overlay down against the surface of the keypad. Smooth it by rubbing the surface with the backing. Unplug the power cord and reassemble if no more modifications are intended.

Beep Silencing

Set the chassis right-side up, remove the three screws holding the speaker assembly and gently set the speaker behind the radio. Locate resistor R212 (1 megohm; brown, black, green) near the center of where the speaker was. Snip the top lead about 1/8" from the resistor and spread the gap slightly.

Plug the power cord into a power source, switch the radio on and press several keys to confirm disabling of the beep signal. Unplug the power cord and reassemble if no more modifications are intended.

This completes all improvements to your PRO2004. Be sure you have remounted the speaker assembly with its three screws, remounted PC3 with its seven screws and one connector, and reattached both shield covers snugly in place. Slide the chassis carefully back into its cabinet -- it's a snug fit -- prying out slightly on the cabinet edges to accommodate the chassis. Reinsert and tighten the four remaining chassis screws.

TURBO SPEED FOR THE PRO-2005 SCANNER

A modification to increase the scan/

Monitoring Times invites you to submit your favorite projects for publication. For more information, contact Rich Arland, P.O. Box 98, Brasstown, NC 28902.

search speed in the earlier PRO2004 scanner and first published in *MT* was simple, involving the replacement of the time base oscillator resonator with a higher frequency crystal, and the addition of a crystal diode.

Grove Enterprises offered the fix, which voided the warranty, but discontinued the service when it was discovered that not all PRO2004 microprocessors would accept the new 10 MHz frequency. A change to 8 MHz crystals, however, solved the problem with only a small sacrifice in speed.*

While the same basic procedure works for the PRO-2005, it is more difficult to access the microprocessor crystal because of a shield plate soldered to board. If you are willing to tackle the project and feel comfortable with electronic components, F.J. Goodsell of Sussex, England, describes the procedure which should take an hour or so. The addition of the diode as described in step six may be done independently of the rest of the modification; it doesn't even require disassembly of the front panel.

You will need an HC18-style 8 or 10 MHz microprocessor crystal, fine-tip soldering pencil, small-gauge rosin-core solder, desoldering wick or tool, and small hand tools.

1. Remove top and bottom covers. Remove screws holding front panel. Unscrew ground wires and unplug all leads from the panel to the main circuit board.
2. Remove the six screws holding the microprocessor board to the front panel. Remove the board carefully so as not to bend the pins on the plug at the edge of the board.
3. Unsolder all the tabs holding the shield plate to the circuit board. Unsolder the ground wire. Lift the shield away exposing the the circuit components.
4. Locate the blue-colored 7.37 MHz ceramic resonator adjacent to the large microprocessor chip. Carefully unsolder its three leads and remove it from the board. You may have to use a solder wick since the crystal is soldered to both sides of the board.
5. Install a 10 MHz microprocessor crystal from the opposite side of the board, passing the two leads through the outside holes left from the old resonator, laying it on its side for clearance and without touching any other components. Carefully solder the leads without overheating the crystal.
6. While the unit is disassembled, you may wish to install a 1N914 or 1N4148 diode which will add several more channels per second speed. The diode is installed between D502 and D503 near the corner of the board. Note the identification band on the diode and make sure it is installed in the same direction as the other two diodes before soldering it in place.
7. Temporarily reconnect the disconnected leads and plugs to check the unit to see if it will scan; be sure none of the components are accidentally touching other parts of the radio. Reassemble in reverse order of the disassembly procedure.

After the modification the PRO2005 will scan and search at 25 or more increments per second in the fast speed and about half that at slow speed.

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*An 8 MHz crystal and 1N914 diode are available for a very limited time for \$10 including shipping from Grove Enterprises, PO Box 98, Brasstown, NC 28902.

In future issues we will tackle mods for some Bearcat scanners. If any of you out there in Scanner-Land have useful mods for your favorite scanner, send them along to this column and we will see that they get into print.

Well, that's about it for this month. I have received tons of letters from readers wanting extra channels for their Sony 2001, 2002, 2003, etc. Does anyone have any mods for the older portable SW receivers that we can use? I know for a fact there are some very interesting filter mods around for the 2001, FRG-7 (great radio!), R-70/R-71, etc.

One more query, does anyone have a source for TOYO or Murata ceramic filters? These filters are generally used in the IF strips of SW and CB sets. About seven years ago, Larry Bailey, G5BRB, came up with an ingenious plan to piggy back a couple of these filters in a CB set he had converted for 10 meter FM use. The mod was a tremendous success and drastically improved the IF bandwidth of the unit. AND, it was very simple to perform. Ergo ... the need to get some filters and give it a try in my Sony 2001.

Speaking of converting CB sets to 10 FM, Bob Heil of Heil Sound used to sell HyGain CB PC boards and a *10 Meter FM Handbook* showing how to modify these little devils to operate on 10 FM. These mods worked on all HyGain (Cybernetics) PC boards and CB sets (23 or 40 channel) with the PLL-02A synthesizer chip on them. I managed to convert several of them (including a couple of CBs).

Now I have a HyGain 23 channel CB that was given to me and once again I have the itch to convert it to 10 FM. Anybody have the Heil *10 Meter FM Handbook* or *73 Magazine* article on doing this conversion? This will make good input for a future column. 73's, Rich

To Vee or not to Vee

This month we take a look at the "inverted vee," an antenna which is continually gaining popularity as a good general purpose antenna for the high frequency bands. The reason that this antenna continues to attract followers is that it has several features of interest to both amateur radio operators and monitoring buffs.

One of its most impressive features is that it can be mounted nice and high with just one support (pole, tower, tree, eave of the roof, etc.). Most HF antennas take two supports, some take four. Another feature of interest is that the inverted-vee is nondirectional, meaning that it is good for communications in any direction. And, for you DX hounds, it has a low angle of radiation (and reception) which helps pull in those distant stations.

The inverted-vee was derived from an "old favorite," the half-wave dipole. But, since it is bent, it takes up less space on your lot than does a dipole. And the inverted-vee has no deep nulls directly off its ends, such as are found with the half-wave dipole.

In terms of responsiveness to signals, its gain is close to that of the dipole, entirely adequate for most general monitoring and communications needs. So, if you're looking for a good all-around high-frequency antenna, read on! The inverted-vee may be just what you're looking for.

Pick Your Site

First choose a high point from which to hang the antenna. Generally, the higher the apex or peak of the antenna, the better it performs, but remember to avoid putting the antenna where it may accidentally contact electric power lines. Also, check to see that there are clear spaces where the two legs of the antenna will run down from the center connector.

Concerning the bend at the top of the antenna, you shouldn't have the angle between the elements (see

Figure 1) too much less than 90 degrees. (But it can be larger.) If the angle gets too large, as you can see, the antenna becomes straight, and is then a regular dipole antenna. Of course, dipoles are good antennas, but we want an inverted-vee antenna at the moment.

For Your Inverted-Vee you will need:

A. Enough wire to make the two legs. About any wire that is strong enough to resist wind and weather should work okay. When you measure the length of your antenna elements, be sure to add about eight inches or so to each wire's length initially, to provide extra length for wrapping the wire around the insulators.

B. Two end insulators for the ends, and then two more end insulators to combine as a center insulator. You can make your own insulators out of heavy plastic, if you like.

C. A length of 50-ohm coaxial lead-in cable with a plug on one end to fit your receiver or transceiver. There is a good bit of variability between antenna installations, and so 75-ohm cable may match your antenna as well as 50-ohm does. And, for MONITORING ONLY purposes, it is very unlikely that you will

notice any difference between 50-ohm, 75-ohm, or even the 93-ohm computer coax. If you have any of these already on hand, use it.

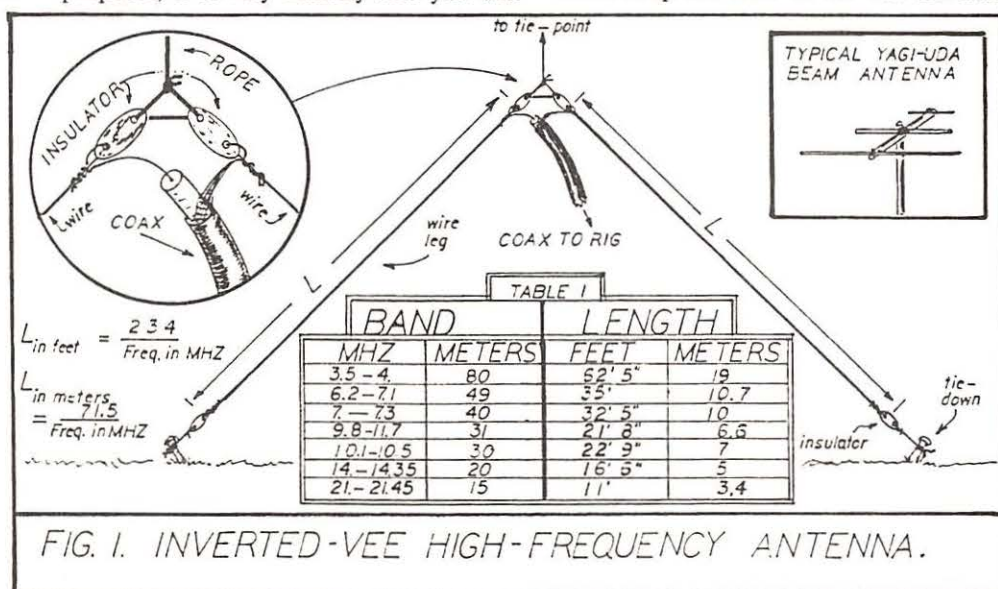
Let's Build it!!

Step 1. Cut the two elements (often called "legs") to length as described in A above.

Step 2. Then put one end of one wire through one of the center insulators as shown in Figure 1. Note where the end of the wire will wrap around the wire itself (see Figure 1), and scrape both the wire and its end where they will touch. Scrape till it is bright; this is to make soldering more effective. You can use a knife blade or sandpaper for this scraping.

Similarly, put the other center insulator on the other leg. These two "center insulators" are then tied together with a short loop of rope through their remaining free holes, as shown in Figure 1.

Step 3. Put the actual end insulators on the other ends of the elements by first slipping an end of an element through the insulator a few inches. Then make sure that you pull the wire end on through the end insulator just enough to make the length of the leg (from Table 1) correct. Then wrap the wire at the end insulator



back around itself as shown in Figure 1 and cut off any excess wire. You may solder the wire, as described in step 2, if you wish, but it is not necessary.

Step 4. Wrap and solder the center wire of the coax to either one of the legs where the leg's wires were wrapped together and soldered in step 2. Similarly wrap and solder the braid of the coax to the other leg (see Figure 1).

Step 5. Use a coax-sealing tape or black plastic tape at the end of the coax cable, to keep moisture from entering the cable. Do a good job of sealing the end of the cable. When this seal starts leaking, your antenna will soon start becoming less effective. I hesitate to recommend sealers like silicone rubber, as I have sometimes had trouble with them degrading performance badly.

Step 6. Now mount the antenna with its center high, as discussed earlier. A nylon rope from the short rope loop (Step 2) in the "center insulators" up to the mounting support is a good way to do this. Then bring both ends of the antenna down toward the ground and secure them with ropes or cables (through the end insulators) to some solid anchor point on the ground.

Good anchor points can be made with wood or metal posts or from the spiral-screw dog-leash anchors sold in pet supply stores. The dog-anchors are like giant screws that screw into the ground to provide a tie-point when no tree trunk, fence, or other solid tie point is available.

Step 7. If you live in lightning country, be sure to use lightning protection. The minimum protection is that you don't operate in rain or stormy weather, and that you ground the antenna lead-in when the antenna is not in use.

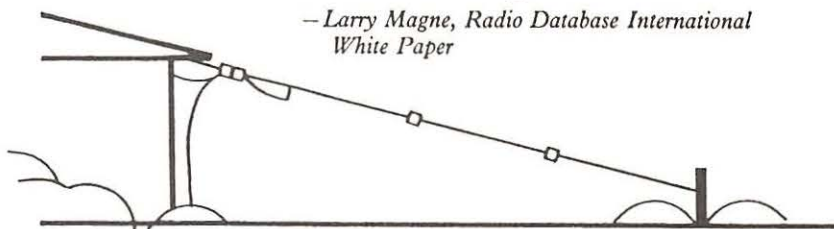
Step 8. Run the lead-in to your rig, and you are ready to operate. Happy monitoring!

RADIO RIDDLES

Last month: Most of us are familiar with the antenna known as the "Yagi."

"The Best Results throughout the Shortwave Spectrum."

— Larry Magne, Radio Database International White Paper



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The form of this antenna which you see most often is a dipole element with a reflector (its longest element) and one or more directors (the shorter elements) added (see square inset in Figure 1).

You see lots of them on rooftops as TV receiving antennas. They are also very popular as a beam antenna among hams and radio monitoring buffs. Last month I told you that calling this antenna simply a "Yagi" is a mistake, and asked you "why?"

Well, this general type of beam antenna was developed by Professor H. Yagi in Japan. The antenna was first reported in Japanese by S. Uda. It seems that Uda made some contribution to the design of the Yagi, and the more common mode, the one with only one reflector, should bear his name as well as that of Yagi.

The third edition of the Institute of Electrical and Electronic Engineers *Standard Dictionary of Electrical and Electronic Terms* tells us that this antenna, with its single reflector, should be called a "Yagi-Uda" antenna. On the other hand, K.F. Lee, in his book, *Principles of Antenna*

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Theory, calls this antenna a "Uda-Yagi."

But if the beam has two or more reflector elements, it may then properly be called simply a "Yagi." So now you can set your radio friends straight on the proper name for a very popular, and usually misnamed antenna.

This month: This month's antenna is an inverted-vee. Are there any other "vee" antennas? How about a non-inverted vee antenna?

Find the answer to this month's riddle, and much more, next month in your copy of *Monitoring Times*. Till then, Peace, DX, and 73.

mt

Q. Where can I get a replacement owner's manual for my Bearcat scanner? (Herman Wheeler, Princeton, WV)

A. Any Bearcat scanner manual is available for \$6.05 including mailing by sending the model number with your request to: Uniden parts department, 9900 Westpoint Drive, Indianapolis, IN 46250

Q. You repeatedly say RG58/U cable is lossy for VHF/UHF scanner monitoring, yet even the Grove ANT4 mobile scanner antenna uses it. Why the contradiction? (Andy Lang, Odessa, TX)

A. The longer the cable and the higher the frequency, the greater the loss. But since a 12-foot length of RG58/U offers only 1.5 dB greater loss than premium Belden 9913 at 900 MHz, there is little reason to sacrifice the small size, flexibility and low cost of the RG58/U in mobile applications.

Q. What are the advantages and disadvantages of indoor active antennas versus full-size outdoor antennas for shortwave listening? (Kevin Angus, Wheeling, WV)

A. Properly mounted, outdoor antennas are preferable. They are higher, free of metallic signal obstructions, intercept more signal, are away from interference-causing wiring and appliances, have no power-consuming (and lightning-vulnerable) circuitry, can be used for transmitting, do not generate their own background noise, can not be strong-signal-overloaded, and are much less expensive.

On the down side, they require high mounting fixtures, are exposed to weather, are long and visually distracting, cannot be easily turned for signal improvement or interference nulling, and may attract lightning.

In spite of their few shortcomings, properly planned and carefully installed, outside antennas definitely have the advantage.

Q. Can I modify my scanner which covers the 88-108 MHz FM broadcast band to get Subsidiary Carrier Authorization (SCA) signals? (Izak Luchinsky, Baltimore, MD)

A. Yes. Any radio capable of tuning the FM broadcast band can be modified to work with an SCA adaptor.

Q. Is there any likelihood that an external preamplifier may damage my receiver? Harry Brown, Pocasset, MA)

A. Likely, no; possible, yes. Most modern receivers are designed to withstand strong-signal overload without damage to sensitive components. Rarely, some radios (notably the Sony ICF2010) succumb to front-end burnout of the delicate field effect transistors in the presence of extremely strong signals.

Q. Taxicab listings are hard to find. Where will I hear them on my scanner? (Robert Brock, Phoenix, AZ)

A. Search the following ranges: 152.270-152.450 (base), 157.530-157.710 (mobile), and 452.0375-452.5125 MHz (simplex).

Q. The BNC antenna connector on my BC200XLT scanner comes loose every few weeks and I have to open the radio to tighten it. Is this common? (George Hickman, Hoffman Estates, IL)

A. While uncommon, others have reported it. You should return it along with a copy of your sales receipt and a letter describing the problem to the Uniden Customer Service department, 6345 Castlegate Court, Indianapolis, IN 46250.

For do-it-yourselfers, the installation of a star washer (if not already present) under the nut should solve the problem. This procedure will require case disassembly and unsoldering the connector.

Q. Where do I send my Regency scanner for repair now that Uniden has bought the company? (Bob Barczak, Milwaukee, WI)

A. Regency and Bearcat scanners are sent to the same address for repair: 9900 Westpoint Drive, Indianapolis, IN 46250.

Q. Where can I get a replacement battery for my old Regency HX1200 scanner? Will it charge from a 12 volt wall adaptor or car battery? (David Polus, Pembroke Pines, FL)

A. Call Regency (now Uniden) parts department at 1-317-842-1036 for pricing and ordering information. The battery pack has no internal voltage regulator and will not charge from a 12 volt source without a dropping (current limiting) resistor.

Q. What frequency range is used for garage door openers? (Izak Luchinsky, Baltimore, MD)

A. Approximately 300 MHz, explaining why Air Force One causes such a problem for nearby residences when it is parked at large airports using its powerful UHF transmitters.

Q. How can I couple several HF (3-30 MHz) receivers to a common antenna line? (Fred Chapman, Fredericksburg, VA)

A. If they were scanners, it would be simple: use readily-available TV-type two-set splitters found in Radio Shack and every electronic appliance department store! Actually, the same devices can be used at HF, but only down to about 3 MHz; below that frequency range they become very lossy.

Commercial installers isolate their multiple receivers by connecting through its own low-gain transistor stage to the common antenna line. This allows the signal to pass into the receiver, but no signal from the receiver to pass back the other way to interfere with other receivers

on the line. It also maintains the nominal 50 ohm impedance of the system and provides enough gain to overcome the loss of the signal-splitting process.

Possibly the simplest way to couple two or more receivers to a common antenna line would be to use separate coax cables from each receiver, commonly connected to the main antenna coax line. Each receiver cable should have a 100 ohm, 1/4 watt or 1/2 watt resistor connected in series with the center conductor for isolation. Signal levels will go down slightly, but not enough to compromise reception noticeably.

With modern receivers, it is quite likely that you could even take all 3-4 receivers and connect their antenna lines in parallel without the isolation and suffer little in the way of mutual interference. Try it; you won't hurt a thing.

Q. I have just gotten back into ham radio after several years and notice the abundance of international broadcasters in the amateur 40 meter band. What are the frequency limits for this broadcast band? (Ken Hydeman, Kettering, OH)

A. Hams share 7.1-7.3 MHz with the international broadcasters as a primary service.

Q. Why doesn't any manufacturer make a shortwave receiver with a continuously variable selectivity filter so that we don't have to choose a specific bandwidth for AM, SSB and so on, but can custom-adjust the bandwidth for best reception? (Russ Conte, Cincinnati, OH)

A. At the present state of the art with analog receiving techniques, IF filters, whether they are crystal, ceramic, inductive or mechanical, are complex designs incorporating several interdependent elements. The properties of these elements cannot be altered without substantially changing the effectiveness of the whole filter.

In the future, when digital techniques evolve for reception, such customizing is more likely.

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Q. What use will the new 136-137 MHz aircraft band extension be put to? (Izak Luchinsky, Baltimore, MD)

A. Slated to open January 1, 1990, 136-137 MHz is allocated for a variety of tasks presently used on the 118-136 MHz range, including air traffic control, UNICOM, operational control and so on.

Q. The specifications for my Kenwood R5000 receiver say that it only tunes as low as

100 kHz, yet the receiver actually goes down to 30 kHz. How come? (Doug Johnson, Wolsey, SD)

A. Credible manufacturers will only specify the range that a receiver actually meets its published specifications (sensitivity, selectivity, image rejection, etc.). While the R5000 can tune that low, its performance rolls off below 100 kHz.

Questions or suggestions sent to Bob Grove are printed in this column as space permits. If you prefer an answer by return mail, you must enclose an SASE.

LETTERS

continued from page 3

The Washington Area DX Association (WADXA) says that they are looking for a few extra hands. Seems to us that they should be easy to come by. Besides the sparkling personality of head honchos Arlene Luskin and Jay Goldberg, the group's meetings feature lively discussions and pot-luck dinners. Dues are a very affordable \$6.00 a year. Even pets are welcome!

If you live in the DC area and would like to get involved in a real nice club, drop Jay and Arlene a note at 606 Forest Glen Road, Silver Spring, Maryland, 20901.

"As a reader of Ed Epstein's daily "World Insider" column in the San Francisco *Chronicle*, I noted that he often mentioned world band radio stations. A letter from him confirmed my suspicion."

That letter comes from our old friend, George Poppin, of San Francisco, California.

"After an exchange of correspondence," continues George, "I invited Ed to our home for a monitoring and DX session. A few days later, an article on shortwave appeared in the *Chronicle*."

"I believe that Ed Epstein deserves some sort of recognition for the kind of promotion he's given our hobby. He is one helluva nice person."

We did see the article and, although too lengthy to reprint here, it's really one of the best we've seen in a mass-appeal magazine (the worst, in *Insight*). Further, we've heard from a few readers who have also heard both George and Ed on a KCBS radio talk show. Hey! That's getting the word out!

Well, we don't have any awards handy so we're doing the next best thing. We're sending Ed a copy of the 1990 edition of *Passport to World Band Radio*, along with our thanks and congratulations.

"When I talk to people about shortwave, they are shocked to learn that I can listen to radio broadcasts from around the world. They are shocked to find that all these countries speak, at times, in English." Clifford Legerton of Summerville, South Carolina, makes a common



Milivoj Rudan of Stoney Creek, Ontario, writes, "I am SWL on and off for at least 25 years." His equipment includes a CB, "just for receiving," Realistic Patrolman 6, Yaesu FRG-7700, Realistic DX-160, Realistic PRO-2021 and many accessories. Antennas are mounted on a balcony. Milivoj also enjoys monitoring longwave broadcasts.

If you have a picture of you and your monitoring post, how about sending a copy to share with other readers? Send to Monitoring Post, P.O. Box 98, Brasstown, NC 28902.

observation about his hobby.

"How handsome, how happy are the faces of the young East German as I share their joy on TV. I feel that shortwave radio was the key to the glorious freedom movement that is exploding not only in eastern Europe but worldwide."

"America must wake up," continues Clifford, "and learn more about the world outside of the U.S. How can we wake up this country to shortwave in the 1990s?"

Clifford, the best way to increase awareness about shortwave is to do what you are doing -- tell people about it. Let's face it though. Promoting shortwave is like any other kind of evangelical work. Not everyone is going to share our enthusiasm. But don't let that stop you. Keep on spreading the word!

"In light of the sweeping changes which have taken place in East Germany, I took the liberty of sending some information on *Monitoring Times* to my good friend Herr K. Fischer, Director of Radio Berlin International." Norval Pagenhardt writes from Scotland, Maryland.

"This old man has patiently waited more than forty years to see the East German government open their borders to the west. Events of recent months have been an answer to my prayers. So don't be surprised when you get a subscription to *Monitoring Times* from K. Fischer, OK?"

We're optimistic but cautious. Call us sticks-in-the-mud, but we have years of experience dealing with Herr Fischer and Radio Berlin International. For years we asked Herr Fischer to help us by providing

information on his station. For years our requests were were ignored. They would not so much as send us a schedule despite what must have been hundreds of requests over the past decade.

We also have years of having to suffer through Radio Berlin International's pathetic "peace and cooperation" propaganda. And it was propaganda, made all the more ironic by the fact that while the station was on the air preaching cooperation, it couldn't manage to get a letter out to us.

They have been taking what sound like positive steps, though. We heard the director of the station concede recently that they had "emphasized the positive and minimized the negative" in the past but that the station would be objective from now on. Listeners will also note the change in the sign-on and sign-off announcement. No longer are they "building a state;" now they are "redesigning a state."

Overall, it's pretty heady sounding stuff. For now, though, we'll take a wait and see attitude. It takes no effort to open the microphone and change the words. Acting professionally is a whole 'nother story.


Yes, these are exciting times. Don't miss the the opportunity to have a center-row seat. Tickets are free. The show starts every time you turn on your radio.

*Letters should be addressed to **Letters to the Editor**, Monitoring Times, P.O. Box 98, Brasstown, NC 28902 and should include the sender's address and telephone number. Not all letters can be used. Those that are will often be edited and excerpted. Because of the volume of mail received, personal replies are not always possible.*

CONVENTION CALENDAR

Date	Location	Club/Contact Person
Jan 21	Yonkers, NY	Metro 70cm Net ARC/ Otto Supliski WB2SLQ 53 Hayward St, Yonkers, NY 10704
Jan 27	St. Louis, MO	St. Louis Repeater/ James Berger WA0FQK 8214 General Sherman Court, Affton, MO 63123
Feb 3-4	Miami, FL	Dade RC/ Evelyn Gauzens W4WYR 2780 NW 3 St, Miami, FL 33125
Feb 11	Mansfield, OH	Intercity ARC & ASE Rpt/ Pat Harris N8EBK 449 Parker St, Mansfield, OH 43551
Feb 17-18	Sarasota, FL	So Fla Convention/ Hadley Carrigan N4ODK 101 N Adamas Dr, Sarasota, FL 34236
Feb 24	Charleston, SC	Charleston ARS/ John Price WB4LQD 778 Piccadilly Dr, Charleston, SC 29412
Feb 24-25	Cincinnati, OH	Great Lakes Div Conv/ Stanley Cohen WD8QDQ 2301 Royal Oak Court, Cincinnati, OH 45237
Feb 25	Davenport, IA	Davenport ARC/ David Johannsen WB0FBP 2131 Myrtle, Davenport, IA 52804
Feb 25	Dearborn, MI	Talk-In 146.28/.88 W0BXR rpt Livonia ARC/ Neil Coffin WA8GWL 35681 Hees, Livonia, MI 48150

Monitoring Times is happy to run brief announcements of radio events open to our readers. Send your announcements at least 60 days before the event to: Monitoring Times Convention Calendar, P.O. Box 98, Brasstown, NC 28902.



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For Sale: PANASONIC RFB-600, like new - \$350 postpaid. Complete run of back issues of the INTERNATIONAL SHORTWAVE LISTENER'S PROGRAM GUIDE from initial issue of April 1984 through evolution into the SHORTWAVE GUIDE, INTERNATIONAL RADIO and MONITORING TIMES of October 1989, make offer. Also have 1987 RAI and 1983-1987 WRTVH. Michael Frank, 7417 Oxford Court, Fort Wayne, IN 46815. [219] 749-2201, evenings.

For Sale: REALISTIC PRO-2005 cellular modified, like new, with box and instructions - \$350. [206] 735-0307, Don, 725 37th St. SE #26, Auburn, WA 98002.

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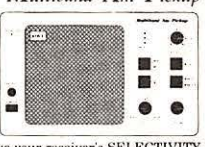
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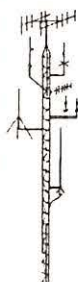
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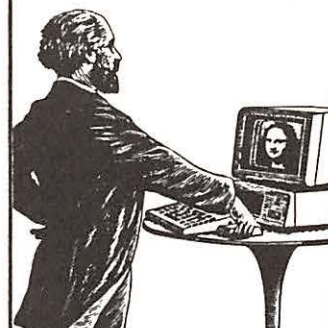
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You Don't Have to Create a Masterpiece



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Closing Comments

Solving the Mysteries

Recently, as I completed the revision of the new edition of my *Shortwave Directory*, my curiosity was again piqued by the continued presence of "mystery" signals that have defied explanation for many years.

Although I have added new information to the "spy numbers" section, they are no longer a mystery; *MT* revealed years ago that transmissions from Virginia and Florida send encrypted messages to agents in foreign countries. Those countries use the same type of equipment to send espionage emissions to their agents in the U.S. and elsewhere.

What remains a mystery are the SLHFBs (single-letter high frequency beacons), endless Morse transmissions of a single letter such as "K" or "P". A few years ago a concentrated effort was made by the FCC and U.S. military agencies to establish the origin of these enigmatic emissions. Some, if not most, of them were determined to be within Soviet borders.

But what is their purpose? Are they navigational beacons for Russian submarines? Marker buoys for Soviet trawlers? Propagation sounders? Weather buoys? Part of the Russian Navy's readiness command?

Scanner enthusiasts have mysteries of their own. When the skip is in, take a listen to 40.64 MHz FM. Several pulse tones per second will be heard if the propagation is right between you and ... who knows where?! *MT* reader David Carberry has discovered yet another pulse transmitter, this one on 33.92 MHz.

Is there any relation between the two frequencies? The FCC and IRAC (the Interdepartment Radio Advisory Committee) is to federal agencies what the FCC is to civil-

ians) allow portions of the 38.25-42 MHz band to be used for wireless microphones and other low-power devices.

Who uses such VHF/UHF pulses and for what purposes? Gumshoes hide bumper beepers on vehicles they wish to track; wildlife agents attach teensy transmitters to animals for migration and habitat studies; communications installations emit short bursts (ionosondes) to test signal paths; government "backbone" relay sites utilize tones to confirm that each link is working.

So how can you find out who these unannounced visitors are? Not from the FCC; they only respond to licensees who are experiencing interference on their assigned frequencies and IRAC won't respond to civilians. So how about going about it the same way the pros do, with RDF (radio direction finding)?!

There are many techniques -- some quite simple -- which provide reliable bearings. A network of interested listeners using home-made loops, beams or Doppler antennas could coordinate their readings and come up with some excellent ideas as to where these signals originate.

MT could serve as "information central," publishing articles on RDF techniques for frequency ranges of interest and lists of frequencies and bearings of unknowns. A network of serious, suitably-equipped monitors could determine sources of intentional interference (such as those individuals who disrupt emergency communications), unintentional interference (like stuck transmitters, harmonic radiation), or our favorite mystery stations.

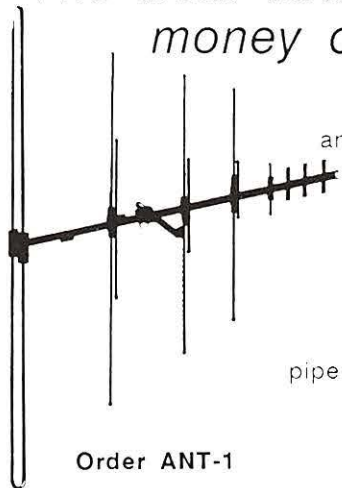
Does this sound like an interesting way to enlarge the scope of our hobby, or is it a bad idea? Let me know your thoughts.



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